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The Role of Emotion Regulation and Social Connectedness on Adult Post-Traumatic Stress Disorder, and Treatment Non-Completion: A Research Portfolio

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Journal Article 1: Systematic Review

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Research Portfolio Abstract

Background: The overarching aim of this research portfolio was to investigate variables which may enhance clinical practice and treatment for adults with severe and enduring mental health presentations. These variables included treatment disengagement and protective factors against future psychopathology. Within this portfolio, the systematic review examined the role of clinical, psychological and therapeutic process variables on treatment non-completion in adults with a Borderline Personality Disorder (BPD) diagnosis. The empirical study sought to investigate a theoretical model of the impact of childhood maltreatment on adult Post-Traumatic Stress Disorder (PTSD) and how this relationship may be mediated and/or moderated by emotion regulation skills and social connectedness.

Methods: A PRISMA systematic search was conducted across 4 electronic databases, followed by manual searches. The included studies were rated against quality assessment criteria and findings were synthesised. The empirical study investigated pre-treatment data from patients receiving a group intervention (i.e. Survive & Thrive) by using correlation, mediation and moderation analyses to explore the theoretical model, within a cross-sectional design.

Results: Sixteen studies were included in the systematic review, with results highlighting variability in the definition of treatment non-completion, and robust evidence for the association between a variety of clinical,

psychological and therapeutic-process variables and treatment non-completion in adults with a BPD diagnosis. Assessment of quality indicated a number of limitations within included studies. In the empirical study, different types of group identifications mediated the relationship between childhood emotional abuse and PTSD. The link between childhood sexual abuse and PTSD was meditated by emotion regulation skills and moderated by identification with family.

Conclusions: Various clinical, psychological and therapeutic-process variables are associated with and predict treatment non-completion in BPD, which inform clinical practice. A consistent measure of treatment non-completion and qualitative studies with service users can further enhance knowledge in this area. The empirical study revealed that targeting adaptive emotion regulation strategies and improving social connectedness can help protect against adult PTSD symptoms and the impact of childhood emotional and sexual abuse, however the results need to account for socioeconomic deprivation and high levels of emotional maltreatment in the sample.

Lay Summary

This thesis investigated factors that may improve the way mental health services are delivered. Two areas of interest are the reasons associated with not completing mental health treatment in people with a Borderline Personality Disorder (BPD) diagnosis and factors that may protect against developing more severe mental health problems in the future in individuals with Post-Traumatic Stress Disorder (PTSD). BPD is a condition that affects how you think feel, act and interact with people, with a number of symptoms such as intense and fluctuating emotions, having upsetting thoughts, acting impulsively and having difficulties with relationships. It is thought that people with a BPD diagnosis do not fully engage with mental health treatment. Not completing treatment compromises the quality of life of people with a BPD diagnosis. Childhood maltreatment which is perpetrated on a repetitive basis through abuse and/or neglect can impact on a person's ability to manage their emotions, and may find it difficult to make and keep healthy relationships. It is also linked to a higher risk of developing mental health problems such as PTSD.

The thesis reviewed published research in a systematic way to find out which factors are linked to disengagement or not completing psychological treatment. Results of the review showed that a number of factors appear to be related to non-completion, including childhood trauma, motivation and the relationship between therapist and patient.

The thesis examined data from patients in a group treatment for trauma and it explored the link between childhood trauma and PTSD in adulthood and how skills in managing emotions and relationships with family, friends and communities impact on the link. Results showed that identifying more strongly with family and friends can reduce how much some types of childhood maltreatment can lead to adult PTSD, and that being more able to manage emotions reduced the impact of childhood sexual abuse on adult PTSD. Overall, the results showed that helping people connect socially with their family and friends could be useful in reducing the risk of developing PTSD in relation to childhood maltreatment experiences.

Journal Article 1: Systematic Review

Psychological Correlates of Treatment Non-Completion in Borderline Personality Disorder: A Systematic Review

Short Title: *BPD Treatment Non-Completion*

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Abstract

Objective: Psychotherapy for borderline personality disorder (BPD) has been associated with increased risk of disengagement. Previous reviews focused on demographic and clinical correlates of drop-out. This systematic review critically evaluated updated studies that investigated clinical, psychological and therapeutic process correlates of treatment non-completion in individuals with a BPD diagnosis.

Methods: A PRISMA systematic review was conducted across electronic databases (PsycINFO, Ovid EMBASE, MEDLINE and CINAHL). Studies that met inclusion criteria were rated on methodological quality and findings were synthesised.

Results: Sixteen articles were identified, representing 14 samples consisting of 1960 participants. There was high variability in the treatment non-completion definition. There was evidence for the association between clinical, psychological variables and non-completion. Conflicting results were identified in relation to therapeutic process variables. Quality assessment and risk of bias revealed a number of limitations within the included studies.

Conclusions: A number of clinical, psychological and therapeutic process variables were found to be associated with treatment non-completion, with the potential to inform clinical practice. Using a consistent tool to measure 'non-completion' and employing qualitative studies are required to better understand the multifaceted reasons for treatment non-completion, which may shift the blame placed on inherent personality characteristics in individuals with a BPD diagnosis.

Keywords: borderline personality disorder; patient dropout; treatment non-completion; psychotherapy; systematic review

Prospero Registration Trial Nr. CRD42019147342

Summations

- This is the first systematic review of treatment non-completion in borderline personality disorder, focussing on therapeutic process variables.
- A number of clinical, psychological and therapeutic process variables were identified as correlates of treatment non-completion, thus providing support for trauma-informed approaches.
- Whilst methodological assessment revealed overall high quality of studies, treatment non-completion definition carried some risk of bias.

Limitations

- The average treatment non-completion of 38.5% across studies needs to be considered in the context of the wide variability of 'non-completion' definitions, treatment type, setting, duration and intensity.
- Heterogeneity of study measures and definition of 'non-completion' did not allow for a meta-analysis to be carried out.

1. Introduction

Treatment non-completion or premature termination from treatment is a significant concern in the psychotherapy literature (1). A recent meta-analysis across 110 psychotherapy studies reported an average dropout rate of 35.2% (2). This is considerably lower than the 47% mean outpatient dropout rate reported by Wierzbicki & Pekarik (1993) and it is at the lower end of the dropout range (30%-60%) estimates of psychotherapy premature termination (3).

Treatment non-completion also has detrimental consequences on services, therapists, other patients, staff morale, and service cost-efficiency (3). Patients who drop out prematurely have been shown to have poorer clinical outcomes than patients who continue in treatment (4). Evidence suggests that 11 to 13 sessions of evidence-based treatments are required for 50%-60% of patients to be considered recovered, highlighting the association of a therapy dose with clinically significant outcomes (5). Furthermore, treatment non-completion can significantly impact on the external validity of psychotherapy research findings (3), particularly if the completers differ significantly from non-completers on baseline characteristics (2). Additionally, treatment effectiveness studies often exclude dropouts from analyses in the context of completers having shown a more positive response to interventions than non-completers (6).

In their review of attrition and early withdrawal from psychotherapy treatment, Barrett et al. (2008) highlight that one of the main methodological issues in researching attrition and premature treatment termination is the wide range of definitions employed (1). The variability in definition might represent distinct constructs and it may impact on study findings. For example, there were lower rates of attrition when treatment dropout was conceptualised as a “no show at a scheduled session” (i.e. 36%) compared to the therapist’s clinical judgement of dropout (i.e. 48%) or when dropout was conceptualised as the number of sessions attended before the end of treatment (i.e. 48%) (3). In order to better understand how key variables relate to treatment non-completion, the concept requires operationalization within a clear framework.

Barrett et al. (2008) conceptualise premature termination of treatment as a multi-factorial and dynamic process, whereas the majority of research focuses on conceptualising treatment non-completion or ‘drop-out’ as a dichotomous outcome (1). The framework for understanding attrition (1) covers variables which may impact on service use: 1) patient characteristics (e.g. gender, age, and ethnicity), 2) barriers to treatment (e.g. service costs, social support networks, accessibility of service, and placement on waiting lists), 3) need factors (diagnosis, symptom complexity, co-morbidity, distress, psychological mindedness), 4) environmental factors (e.g. treatment type and setting, staff attitudes, access to care), 5) perceptions of mental health problems (e.g. understanding of the disorder and cultural attitudes) and 6)

beliefs about mental health treatment (e.g. therapist expertise, expectations of treatment length and effectiveness).

The term ‘treatment non-completion’ will be utilised in this systematic review to encapsulate the varied terms often referred to as dropout, premature termination, discontinuation, disengagement and attrition in therapy (7). The term ‘treatment non-completion’ reflects the multi-factorial process posited by Barrett’s framework as it encompasses both agency-initiated termination, which is attributed to non-attendance or failure to engage in treatment and patient-initiated dropout, which is attributed to dissatisfaction with treatment or to remission of the problem as well as a mutual agreement to discontinue between therapist and patient (7).

Borderline Personality Disorder (BPD) is a common psychiatric disorder, with a reported prevalence rate of approximately 1% in the UK (8) and between 2-6% in the American population (9). BPD is associated with high mental health treatment utilisation (10) and with increased levels of psychosocial impairment (11). Treatment dropout is associated with adverse health and social outcomes for people with BPD (12). However, psychosocial improvement was found to be strongly related to the symptomatic status of people with BPD diagnosis (13). It has been suggested that people with a BPD diagnosis were more likely to terminate psychotherapy prematurely and BPD treatment has historically been associated with high treatment non-completion rates (14; 15; 16). A few theories have been suggested as likely

explanations for the underlying mechanisms for premature termination in a BPD population. Attachment theory (17) highlights the impact of disorganised attachment style on emotion dysregulation via an attachment double-bind, whereby the source of attachment is also the source of abuse and pain, which could lead to an inability to self-soothe. Similarly, growing up in an invalidating environment (18) compromises the ability to identify the source of distress and to tolerate it, which can translate into an inability to remain in treatment when it becomes emotionally difficult. Traumatic transference (19) posits that the patient has unconscious expectations that they will be exploited by the therapist despite overt behaviours that might suggest otherwise. When the therapist's empathy is perceived and experienced as dangerous, premature termination, along with treatment noncompliance, hostility, detachment, and dissociation are possible means of self-protection for the patient (20). However, the reduced stigma associated with treating BPD has led to increased clinician confidence in working effectively and keeping patients in treatment (21).

Throughout the past three decades, numerous empirical studies have identified a range of variables significantly associated with treatment non-completion. In their systematic review, McMurran et al. (2010) concluded that client characteristics, such as younger age, lower education and lower occupational levels were associated with treatment non-completion across all personality disorder diagnoses (7). A study of specialist services for personality disorders highlighted the role of male gender and young age as

predictors of dropout (22). Additionally, lower competence in skills necessary for therapy (e.g. poor social problem solving, avoidance coping and lower levels of persistence) were all strongly correlated with treatment non-completion (7). McMurran et al. (2010) also found that people with other types of personality disorders apart from BPD were more likely to discontinue treatment, which limits the generalizability of findings to a BPD population. Further, they indicated that the majority of studies included in their systematic review were not adequately powered and the associations between variables lost their significance when multivariate analyses were employed compared to univariate analyses, which may have conflated the findings. Additionally, McMurran et al. (2010) highlighted that the majority of studies focused on individuals' disorders and traits but service-related barriers and clients' perceptions and beliefs about their problems and about the offered treatments have largely been neglected (7).

In their systematic review and meta-analysis on treatment completion in BPD, Barnicot et al. (2011) found that socio-demographic characteristics were consistently non-predictive, while commitment to change, therapeutic relationship and impulsivity were significant predictors of dropout (23). These findings are consistent with the wider psychotherapy literature (2; 3). In addition, the relationship between therapeutic alliance and dropout in adult psychotherapy is well established (24, 25). Sharf et al. (2010) further highlighted that low educational attainment, longer treatment lengths and inpatient settings moderated the relationship between therapeutic alliance

and dropout (24). Contrastingly, in the BPD literature, treatment setting, length and type of intervention was not associated with completion rates; however, Barnicot et al. (2011) argued that their meta-analysis may not have been sufficiently powered to detect significant moderators (23). Barnicot et al.'s (2011) review was also limited by a wide range of dropout definitions, making interpretation of findings difficult (23) but also by including only psychotherapies shown to be effective for at least one symptom of BPD in a randomised control trial. This criterion may have affected results; however, none of their included studies indicated effectiveness for multiple BPD symptoms.

To conclude, existing reviews have highlighted a range of patient socio-demographic, clinical and therapeutic process variables that appear to be related to treatment non-completion in BPD. It is important to critically and systematically re-evaluate this association in light of more recent research, since the last systematic review was carried out ten years ago (7). It also appears that there are few studies investigating the relationship between therapeutic process variables and treatment non-completion in BPD psychotherapy. This is of particular interest as additional therapist-patient interactions or therapeutic process variables may be amenable to intervention, unlike patient demographic characteristics. Further, none of the previous reviews carried out a formal quality assessment based on validated quality assessment tools. It is imperative that a methodological quality assessment is carried out in order to establish a strong evidence-base.

1.1. Aims of the Review

Therefore, the current systematic review aims to identify, summarise and critically evaluate the studies that investigated treatment non-completion from psychotherapies identified as effective for borderline personality disorder. Specifically, the review aims to address the following research questions:

1. How is treatment non-completion defined in psychotherapeutic treatments for patients with a borderline personality disorder diagnosis?
2. What are the clinical and psychological characteristics associated with treatment non-completion in patients with a borderline personality disorder diagnosis?
3. What are the therapeutic process variables associated with treatment non-completion in patients with a borderline personality disorder diagnosis?
4. What are the methodological sources of bias in the literature?

2. Material and Methods

2.1. Definitions

The systematic review was conducted following the PRISMA statement (26) (see Appendix B). For the purpose of this review, 'treatment non-completion' is defined in accordance with McMurran et al.'s (2010) definition as stated in the previous section (7). It is acknowledged that dividing variables into 'clinical', 'psychological' and 'therapeutic processes' may be arbitrary, as some factors may overlap. 'Clinical variables' refer to diagnosis related factors like symptom complexity, or co-morbidity, whereas 'psychological variables' include factors relevant to the individual rather than the diagnosis, such as motivation, avoidance, or experiences of childhood abuse. 'Therapeutic-process variables' include concepts related to the therapist-patient relationship.

2.2. Inclusion and Exclusion Criteria

An article was included if:

- The full sample consisted of participants aged 18 and over, who met the criteria for a Borderline Personality Disorder or Emotionally Unstable Personality Disorder, as defined by the Diagnostic Statistical Manual of Mental Disorders (27; 28; 29) or the ICD-10 (30) using a structured assessment criteria and/or clinical judgement.
- The empirical study consisted of psychotherapeutic interventions that had been shown to be effective in the treatment of BPD. 'Effective' in this context refers to the improvement of one or more symptoms of

BPD, as defined by DSM or ICD-10, in at least one randomised controlled trial (RCT) compared to treatment as usual or to a different psychotherapy.

- The study presented and/or investigated information on predictors and/or factors associated with treatment 'non-completion'.
- The study was written in English and published in a peer-reviewed journal.

Exclusion criteria were as follows:

- Non-empirical studies such as review articles, qualitative studies, single case studies, unpublished articles, conference abstracts, commentaries, protocols or book chapters.
- Participants with a mixed personality disorder diagnosis were excluded as well as studies that included participants with marked cognitive impairments such as an intellectual disability or traumatic brain injuries.

2.3. Search Strategy

The search was conducted in June 2019 and it consisted of an initial search of the Cochrane and Prospero databases in order to identify any similar systematic reviews that had recently been undertaken. The search revealed no relevant recent systematic reviews. The protocol of the current review was subsequently registered on the Prospero database in October 2019 (see Appendix C). The following electronic databases were searched for relevant articles investigating treatment non-completion in people with BPD: Ovid

EMBASE, MEDLINE, PsycINFO, and CINAHL. The search focused on studies published between 1980 and 2019 (search date) in order to focus on new treatments developed or adapted for BPD. The electronic searches were based on medical subject heading (MeSH) terms. The search strategy used the Boolean operator 'AND' to combine terms related to 'borderline personality disorder' ("Borderline Personality Disorder*" OR "borderline personality disorder" OR BPD OR "Emotionally Unstable Personality Disorder*" OR "emotionally unstable personality disorder*" OR EUPD), 'non-completion' ("Patient ADJ2 Dropout" OR "patient ADJ2 compliance" OR "treatment* ADJ2 non-complet$" OR "treatment* ADJ2 terminat$" OR "treatment* ADJ2 engag* OR "treatment* ADJ2 disengage*" OR "treatment* ADJ2 received" OR "session* ADJ2 attended" OR "drop-out" OR dropout OR dosage OR attend* OR adhere* OR attrition OR engage* OR disengage OR discontinu$ OR "non-complet$" OR terminat$), and 'psychotherapeutic intervention' (Psychotherap$ OR counseling OR treat* OR program* OR intervention* OR "group-based" OR "group therap$" OR "individual therap$" OR "cognitive ADJ3 therap$" OR "behavior$* ADJ3 therap$" OR "cognitive behavior$ therap$" OR CBT OR "dialectical behavior$ therap$" OR DBT OR "schema therapy" OR "mentalization based therapy" OR MBT OR "Systems Training for Emotional Predictability and Problem Solving" OR STEPPS OR "transference focused psychotherapy" OR "dynamic deconstruction therapy" OR DDP OR "emotion regulation group therapy" OR ERGT).

A university librarian was initially consulted regarding the search terms and the sensitivity of the search strategy was later established by examining the

reference lists of relevant studies. After duplicate articles were removed, the lead author screened titles and abstracts and then assessed full-text articles for eligibility according to the inclusion and exclusion criteria. When it was unclear whether a study met the eligibility criteria, the full-text article was obtained. Reference lists of the included articles, previous reviews and meta-analyses were examined for additional studies. A manual hand search of relevant journals from the past 10 years was conducted. These journals included Acta Psychiatrica Scandinavica, Journal of Personality Disorders, Behaviour Research and Therapy Journal, Borderline Personality Disorder and Emotion Dysregulation, British Journal of Clinical Psychology, Journal of Consulting and Clinical Psychology, Journal of Personality Disorders and Journal of Behaviour Therapy and Experimental Psychiatry.

2.4. Data Extraction

A data extraction pro-forma was developed and piloted on five relevant articles and adapted accordingly so that all relevant variables were captured. Key characteristics from each identified study were extracted including 1) basic information (i.e. author, year of publication, country of study, study design and follow-up period, if applicable), 2) participant information (i.e. sample size, mean age, and percentage of females), 3) psychotherapeutic intervention (i.e. type of intervention, control if applicable, setting, duration and intensity of intervention), 4) non-completion information (i.e. definition and percentage), 5) outcome data (i.e. correlates and predictors of non-

completion) and 6) effect size of the relationship. Effect sizes were extracted and calculated based on the reported statistics (see Appendix D).

2.5. Quality Assessment and Risk of Bias

The methodological quality and risk of bias of each study was critically assessed using an adapted version of the Agency for Healthcare and Research Quality (AHRQ) tool (31). The final version comprised of eleven quality criteria (see Appendix E). For increased inter-rater reliability, the quality of the studies was assessed by the lead author and by the second author who repeated the assessment process for 7 out of the 16 articles (43.75 %). Initially 42 out of the 63 criteria (67%) from the 7 articles were assessed consistently, indicating a moderate internal consistency ($k = .42$, $p < .000$). Twenty discrepancy ratings were one category apart (i.e. “well covered” vs. “adequately covered”) and one was two categories apart (i.e. “well covered” vs. “not adequately covered”). Any disagreement between the two raters was discussed until 100% consensus was reached.

3. Results

3.1. Study Selection and Characteristics

The search strategy identified one hundred and twenty-seven records. Following the removal of duplicates (*N*=37), thirty-nine titles and abstracts were excluded for being reviews (*N*=13), comments (*N*=2), case studies (*N*=2), books (*N*=10), qualitative studies (*N*=4), RCT protocols (*N*=3), corrections (*N*=3) and conference abstracts (*N*=2). Fifty-one full-text articles were assessed for eligibility. The final sample consisted of sixteen articles that met the inclusion criteria. See Figure 1 for a diagram of the PRISMA flow search process, and Appendix F for reasons for the exclusion for each of the excluded full-text articles. Key characteristics of the studies are summarised in Table 1. In some cases, multiple articles derived from the same cohort (i.e. 34; 35; 45, 46). Therefore, the rest of sub-section 3.1. will refer to the fourteen distinct samples rather than the sixteen studies in which they are described. The combined sample consisted of a total of n=1960 participants, from 14 different samples. The mean age of participants was 36.32 years (SD=8.63), and 90.2% of the sample were female. Sample size ranged from n=14 (32) to n=541 (36). Publication date ranged from 1994 (46) to 2018 (41).

Two samples were recruited in the UK, whereas the remainder were recruited in the USA (n=4), Germany (n=3), the Netherlands (n=3), Canada (n=1), Spain (n=2) and Switzerland (n=1).

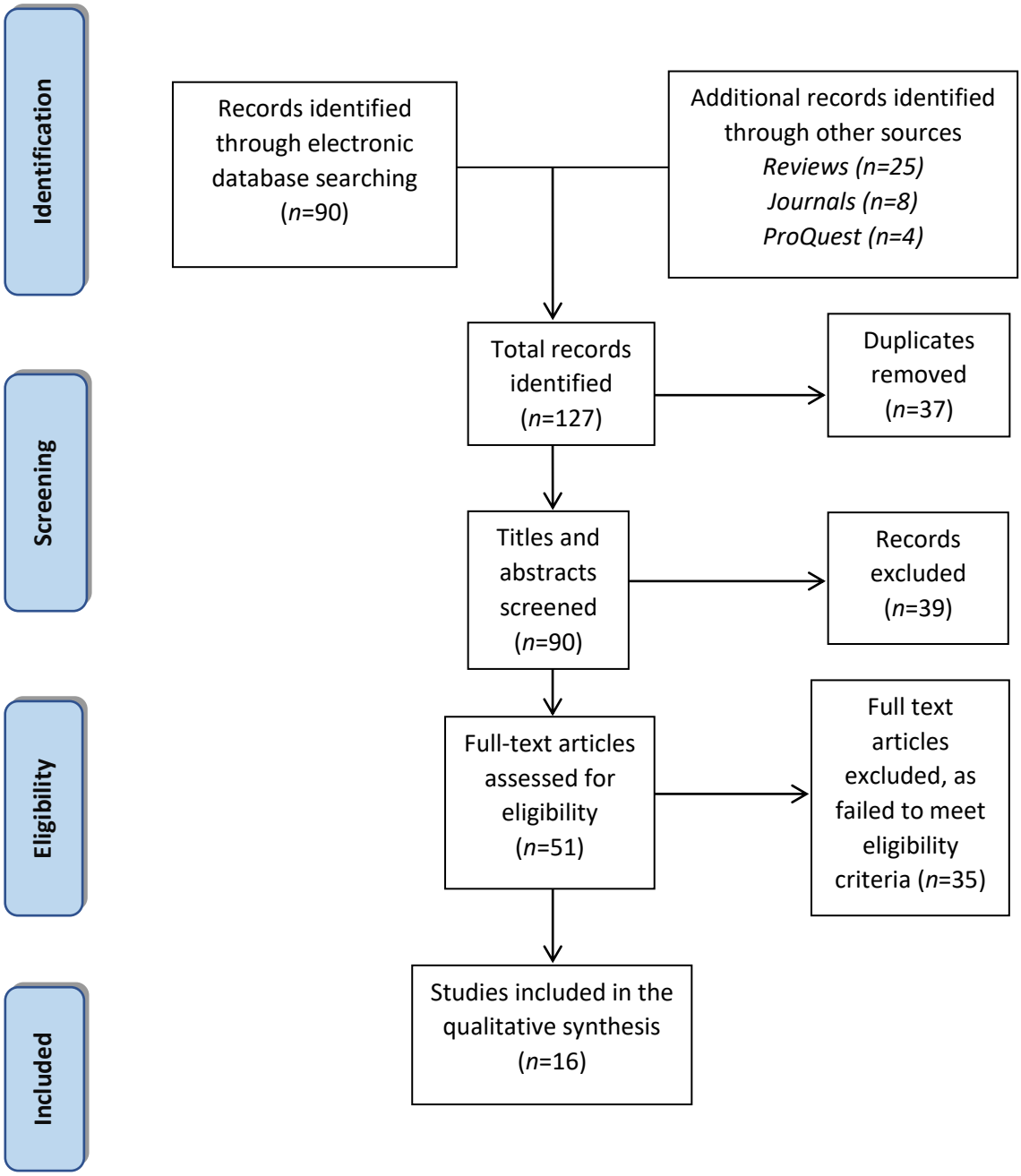

Figure 1. PRISMA flow diagram

Eight studies were longitudinal in design (33, 34/35, 39, 43, 44, 45/46), while the remainder were cross-sectional. Three samples were part of a randomised control trial (33, 34/35, 40), while the rest of the samples were part of observational studies. The follow-up periods ranged between 6 months (39) and 1 year (33, 44, 45/46). All the samples were comprised of participants with a 'Borderline Personality Disorder' diagnosis. To confirm eligibility criteria regarding diagnosis, nine studies utilised the structured clinical interview for the DSM-IV, two studies for the DSM-III-R (45/46), and one study for the ICD-10 (32). Two studies used the IPDE for Axis II pathology, whose subscales correspond to a personality disorder described in DSM-IV (47).

Nine samples comprised of outpatients (33, 34/35, 37, 39, 40, 41, 43, 45/46, 47), while three samples involved inpatients only (36, 38, 42). One study recruited participants from a tertiary specialist outpatient service (32) and one from a community personality disorder service (44). Treatment types ranged between dialectical behaviour therapy (DBT), schema focused therapy (SFT), transference focused psychotherapy (TFP), psychodynamic psychotherapy and systems training for emotional predictability and problem solving (STEPPS). Three studies employed group based therapy, such as STEPPS (33) or an adapted DBT skills group (41, 43), two samples utilised individual psychotherapy, such as SFT and TFP (34/35) and psychodynamic psychotherapy (45/46), while the remainder of the studies comprised of a combination of individual and group based therapy, either DBT (32, 36, 37,

38, 40, 42, 44, 7) or schema therapy (39). Only three studies explored non-completion rates between an intervention and a control group. These included treatment as usual (33), general psychiatric management (40) and inpatient standard care (38), whereas one study employed an active control group, such as community treatment by experts (41), while the remainder of the studies did not utilise control groups.

The duration and intensity of therapy modalities was varied. Three studies followed the standard 12 months DBT treatment for outpatients (37, 40, 44) and the intensity ranged between 180 minutes per week plus out of hours phone coaching skills (44, 37) to 300 minutes/week (40). Patients in adapted DBT modalities received 150 minutes/week of skills group DBT over 13 weeks (41, 43), 280 minutes/week of individual and group DBT in an inpatient setting for 8-12 weeks (36, 38, 42) or 830 minutes/week of combined individual and group based intensive DBT over 4 weeks (47). Only one study offered DBT on an open-ended basis (32). STEPPS treatment lasted for 20 weeks (33), whereas the remainder treatments were of longer duration, lasting longer than 1 year. For example, schema therapy was offered for 150 minutes/week for 2 years (39), while patients received 100 minutes/week of schema-based and transference-based psychotherapy for 3 years (34, 35). The first 2 years for 100 minutes/week of psychodynamic psychotherapy were included in the analysis (45/46). There was no pre-set termination date for psychodynamic psychotherapy (45/46).

3.2. Definition of Treatment Non-Completion

There was a wide variety in the way studies defined patients who did not complete treatment, ranging from non-completion of the full treatment, missing certain numbers of sessions, or using attendance at last assessment as a proxy for treatment completion.

Most studies which employed DBT or adapted DBT treatment modalities utilised Linehan's definition of dropouts as patients who missed 4 consecutive appointments of any one of the four components of the intervention, both in individual and group sessions (32, 37, 40, 41, 44). Black et al. (2009) acknowledged that both number of STEPPS sessions attended and last follow-up appointment are indicators of early discontinuation, however they utilised last assessment time for analysis purposes as a proxy measure for early discontinuation. The problem with this approach is that it does not consider the potential dosage effect of treatment or the treatment engagement processes until the point of the last assessment. It also does not take into account the varied reasons for non-completion, either agency-initiated or patient-initiated.

One sample defined non-completers relative to the status of completers, who had either completed the full treatment or were still in treatment following 3-year schema-based or transference-based psychotherapy (34/35). In inpatient settings, premature termination was defined as not completing the full 84 days of the assigned treatment (36), leaving treatment before the last session (38, 42) or before a set discharge date (38). A small number of

studies did not provide a clear definition of treatment non-completion (39, 43, 47) or provided a subjective definition such as ‘termination against the advice of therapist’ (45/46), without further clarification as to the reason for premature termination.

The mean treatment non-completion rate across the 14 samples was 38.2%, with a range of 19.91% (47) and 53% (43). The highest average treatment non-completion rate across the countries was in the United States of America (51%), followed by the UK (48.5%), Spain (41.5%), Canada (38%), the Netherlands (36%), Germany (30.5%), and Switzerland (19.91%). Treatment non-completion rate was lower in inpatient settings (30.5%) compared to outpatient settings (42%). It appeared that there was a wide variability of treatment non-completion across treatments of different lengths. This discrepancy was partly due to the definition of dropout and the point at which dropout was considered (i.e. 31% dropout at 3 months compared to 50% dropout at 24 months in psychodynamic psychotherapy studies). The wide variability of treatment non-completion across countries may have also been due to the way health care systems are funded (i.e. public vs. private), which may indirectly impact on access to psychotherapy via service provision and associated costs.

Table 1. Study and sample characteristics from included studies

Author(s), date, country	Sample size (*n*)	Mean Age (SD)	% women	Treatment type and Duration	Setting	Design (follow-up period)	Definition of non-completion	% non-completion
32. Webb & McMurran **2009** **UK**	14	36.90 (9.15)	100%	Individual and group open-ended DBT- based on DBT-based therapy	Tertiary specialist outpatient service	Observational Cross-sectional No follow-up	Non-attendance of four consecutive sessions without good reason or unilaterally deciding to quit therapy	50%
33. Black **2009** **USA**	164	31.97 (N/R)	85%	Group intervention STEPPS +TAU (*n*=92) vs. TAU (individual therapy, medication & case management) (*n*=72) for 20 weeks	Outpatient	RCT Longitudinal 1-year follow-up	Nr of STEPPS session indicator of early discontinuation but last assessment time - measure of early discontinuation	51% attended at least 10 sessions 39% attended at least 15 sessions & last assessment
34. Spinhoven **2007** **The Netherlands**	88	30.55 (7.7)	92.5%	Individual SFT (*n*=45) vs. individual TFP (*n=43*) 50 min 2 sessions/ week for 3 years	Outpatient	RCT Longitudinal Follow-up during 3 years of treatment	Completers = terminated treatment or still in treatment after the 3-year study period	26.6% SFT (6 completed within 3 years, 27 still in treatment after 3 years) 51.1% TFP (2 completed within 3 years, 19 still in treatment after 3 years)
35. Arntz **2015** **The Netherlands**	88	30.55 (7.7)	92.5%	Individual SFT (n=45) vs. individual TFP (n=43) 50 min 2 sessions/ week for 3 years	Outpatient	RCT Longitudinal Follow-up during 3 years	Completers = terminated treatment or still in treatment after the 3 year study period	26.6% SFT (6 completed within 3 years, 27 still in treatment after 3 years)

						of treatment		51.1% TFP (2 completed within 3 years, 19 still in treatment after 3 years)
36. Kroger **2014** **Germany**	541	29 (8.23)	90.4%	Individual & group DBT for 12 weeks, 4 hr 40 min/week: 50 minute/week individual sessions, 50 mins psycho-education group,180 minutes/ week skills training	Inpatient	Observational Cross-sectional No follow-up period	Premature termination = not completing the full 84 days of the assigned treatment	35%
37. Landes **2016** **USA**	56	36. 77 (10.56)	75.4%	Individual & group DBT 1 year of standard DBT	Outpatient	Observational Cross-sectional No follow-up period	Non-completion = missing 4 consecutive appointments of any one treatment component	51.80%
38. Steuwe **2017** **Germany**	89	29.8 (9.95)	76.4%	Individual & group DBT for 8-12 weeks, 4 hr 35 min/week 50 min individual sessions/week, 45 min psycho-education group, 180 min/week vs. standard inpatient care (supportive talks) 30 min twice/week	Inpatient	Observational Cross-sectional No follow-up	Treatment dropout = discharged from the ward earlier than week 8 or earlier than the final discharge date fixed in week 6	24.7%

39. Dickhaut & Arntz **2014** **The Netherlands**	18 2 cohorts of 8 and 10 patients	28.5 (8.7)	100%	Individual & group Schema therapy for 2 years 150 min/week 90 min/week group schema therapy & 1h/week individual schema therapy sessions	Outpatient	Observational Longitudinal 6-month follow-up	N/R	33.3% in year 1 5.6% in year 2
40. Wnuk **2013** **Canada**	180	30.36 (9.9)	86%	Individual & group DBT for 1 year 300min/week 60 min/week individual sessions, 120 min/week group skills training, 120 min/week phone coaching vs. GPM 1 hr/week individual sessions including medication management	Outpatient	RCT Cross-sectional No follow-up	Treatment non-completion = failure to attend 4 consecutive scheduled individual and group treatment sessions over 48 weeks	38%
41. Farres **2018** **Spain**	118	29.84 (7.76)	87.5%	Group DBT skills training for 13 weeks 150 min/week	Outpatient	Observational Cross-sectional	Dropout=4 consecutive missed sessions of therapy, regardless of the reason	30%
42. Rusch **2008** **Germany**	60	27.8 (6.9)	100%	DBT for 12 weeks 120 min/week individual therapy + 1.5 hr/week individual body-oriented therapy, 120 min/week	Inpatient	Observational Cross-sectional No follow-up	Leaving therapy before end of 11th week of therapy	32%

				group skills training + 3 hr /week group skills (psycho-education, peer group meeting, mindfulness)				
43. Soler **2008** **Spain**	79	27.4 (5.66)	86%	Adapted DBT skills-group psychotherapy (skills training and phone calls only) for 13 weeks 150 minutes/week skills group psychotherapy	Outpatient	Observational Longitudinal 3 months follow-up	N/R	53% drop-out
44. Barnicot **2016** **UK**	70	32 (10.6)	90%	Individual & group DBT for 12 months 180 min/week + coaching skills 60 min/week individual therapy, 120 minutes/week group skills training, out of hours telephone skills coaching	Community Personality Disorder service	Observational Longitudinal study 1-year follow-up period	Treatment discontinuation = missing more than 3 consecutive individual or group sessions	47% completed between 1 and 11 months of DBT, 53% completed all 12 months
45. Smith **1995** **USA**	36	N/R	100%	Open-ended individual psychodynamic psychotherapy for 2 years 100 min/week	Outpatient	Observational Longitudinal 1-year follow-up	Termination of therapy against advice of therapist	31% at 3 months 36% at 6 months 50% at 24 months
46. Yeomans **1994** **USA**	36	N/R	100%	Open-ended individual psychodynamic psychotherapy for 2 years 100 min/week	Inpatients and outpatients	Observational Longitudinal 1-year follow-up period	Termination of therapy against advice of therapist	31% at 3 months 36% at 6 months 50% at 24 months
47. Perroud	447	30.91 (8.5)	83%	Individual & group adapted DBT (i-DBT) for 4 weeks	Outpatient (day	Observational	N/R	19.91%

2010 **Switzerland**				50 min individual sessions and 780 min/week group therapy	hospital & crisis centre hybrid)	Cross-sectional No follow-up		

SD = Standard Deviation; DBT = dialectical behaviour therapy; i-DBT = intensive dialectical behaviour therapy; TAU = treatment as usual; SFT = schema focused therapy; TFP = transference focused psychotherapy; STEPPS = Systems Training for emotional Predictability and Problem Solving; GPM = General Psychiatric Management; UK = United Kingdom; USA = United States of America; RCT = randomised controlled trial; N/R=not reported.

3.3. Clinical and Psychological Correlates and Predictors of Treatment Non-Completion

The results of the studies exploring the relationship between clinical and psychological variables and treatment non-completion are detailed in Table 2.

Non-completion was associated with younger age (37; 45) and with lower levels of education in multivariate analyses (47).

3.3.1. Problem Recognition and Competency

Treatment non-completion was associated with patients being in the pre-contemplation stage of change (43). Further, McMurran et al. (2009) found that non-completers were more likely to have high external motivation and low internal motivation for treatment, with a large effect size (32). Experiential avoidance was a significant correlate across inpatient and outpatient settings and across different treatment settings. Landes found that higher levels of non-acceptance of emotional responses were significantly associated with dropout in an outpatient DBT programme lasting 1 year (37), and higher experiential avoidance was correlated with non-completion and significantly predicted dropout from treatment across a 12 week inpatient DBT study (42).

3.3.2. Symptom Complexity

A large number of studies reported findings on the relationship between variables associated with symptom complexity and treatment non-completion

(33, 35, 37, 40, 41, 45, 46). Baseline impulsivity (33, 46), hostility (45), and distress (37) were significantly associated with early discontinuation. However, Yeoman's study was based on a small sample size and used the Severity Illness Scale (SIS), which was developed for the study and was not validated (46). Dropout was also predicted by higher levels of baseline anger (40), and hostility (35). Baseline impulsivity remained a significant predictor of dropout in the multiple regression model (33) and so did baseline hostility when combined with age in a two-variable regression model (14).

3.3.3. Co-morbidity

Three studies found an association between treatment non-completion and co-morbid Axis I disorders (40, 42) as well as Axis II disorders, such as anorexia nervosa and alcohol abuse (36), but also eating disorder and cocaine use disorder (41).

3.3.4. History of Childhood Abuse

Childhood abuse was found to be significantly associated with dropout (35, 38). Arntz et al. (2015) found that a severe history of childhood physical abuse was a significant correlate and predictor of premature termination from schema-based and transference-based psychotherapy over three years (35), whereas Steuwe et al. (2017) found a small/medium effect size for the relationship between childhood emotional abuse and premature treatment termination, in an 8-12 week inpatient DBT treatment (38). Childhood physical abuse was not a significant correlate (38).

3.3.5. Lifetime Suicide Attempts

In terms of lifetime suicide attempts, two studies found conflicting results, as Wnuk et al. (2013) found that higher number of lifetime suicide attempts predicted dropout (40), while Rusch et al. (2008) found that dropout was associated with and predicted by lower numbers of suicide attempts (42).

3.3.6. Prior Inpatient Treatment

Smith et al. (1995) found that prior inpatient treatment and discontinuation with prior inpatient therapist in the community was associated with increased dropout in the univariate analyses, but lost significance in the multivariate analyses (46).

Table 2. Clinical and psychological correlates and predictors of treatment non-completion

Variables Author (year)	Measure	Association (significance level)	Effect size	Key findings
Age				
Landes, 2016	The Demographic Data Schedule (DDS; 48)	OR=0.28 (*)	S	Younger age was significantly correlated with dropout status
Smith, 1995		x^2=3.04 (*)		Age significantly predicted early dropout in a 2-variable regression model
Education level				
Perroud, 2010	Years of education	HR=0.69 (**)	S	Low education levels predicted drop-out in the multivariate analysis
Stage of change				
Soler, 2008	University of Rhode Island Change Assessment scale (URICA; 49) - Pre-contemplation subscale	x^2 = 7.00 (*)		Individuals assigned to the pre-contemplation stage were more likely to drop out from the DBT group
Motivation for treatment				
Webb & McMurran, 2009	Treatment Motivation Questionnaire (TMQ; 50) - High External motivation - Low Internal motivation	*r*=.70 (*) *r*=.70 (*)	L L	Treatment non-completers showed higher external and lower internal motivation for treatment.
Experiential avoidance				
Landes, 2016	The Difficulties in Emotion Regulation Scale (DERS; 51) - DERS non-acceptance scale	OR=1.98 (*)	S	Higher levels of baseline non-acceptance of emotional responses were significantly associated with dropout
Rusch, 2008	Experiential avoidance (AAQ; 52)	B=0.11	S	Higher experiential avoidance was correlated with non-completers and significantly predicted dropout
Baseline impulsivity				
Black, 2009	The Barratt Impulsiveness Scale (BIS; 53)	*r*= 0.18 (*) B= 0.46 (*)	S M	Greater level of impulsivity at baseline was positively associated with early discontinuation and predicted early discontinuation in the multiple regression model
Yeomans, 1994	Severity Illness Scale (SIS; 46)	*r*=-0.51	M-L	Greater impulsivity was negatively correlated with length of treatment

Baseline hostility Arntz, 2015	Symptom checklist (SCL-90; 54) - Hostility subscale	β=0.14 (*)	S	The multivariate logistic regression model revealed that higher levels of baseline hostility were a significant predictor for premature treatment discontinuation from both SFT and TFP
Smith, 1995	Buss-Durkee Hostility Index (55)	x^2=4.50 (*)		Baseline hostility was associated with dropout in the univariate analysis and remained significantly predictive of dropout when combined with age in the multivariate analysis
Baseline anger Wnuk, 2013	State-Trait Anger Inventory (STAXI; 56)	OR=1.10 (*)	S	Higher baseline anger predicted dropout in the multivariate logistic regression
Baseline distress Landes, 2016	The Brief Symptom Inventory (BSI; 57) - Global Severity Index (GSI)	OR=0.22 (*)	S	Baseline distress was significantly associated with dropout status
Co-morbidity				
Kroger, 2014	Structured Clinical Interview for DSM-IV AXIS II Disorder (SCID-II; 58)	N/R		Expulsion was associated with anorexia nervosa and alcohol abuse
Wnuk, 2013	Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; 59)	OR=0.69 (*)	S	Higher number of current Axis I disorders predicted dropout
Rusch, 2008	State Trait Anxiety Inventory (STAI; 60)	*r*<0.5	S-M	Non-completers had significantly more trait baseline anxiety
Carmona i Farres, 2018)	Eating disorder (ED) cocaine use disorder (CUD)	OR=3.77 OR=4.46	M M	Co-morbid eating disorder and cocaine use disorder significantly predicted drop-out
History of childhood abuse Arntz, 2015	Interview for Traumatic Events in Childhood (ITEC; 61) - Childhood physical abuse	β=0.261 (*)	S-M	More severe history of childhood physical abuse was a significant correlate and a predictor of premature treatment discontinuation from both SFT and TFP
Steuwe, 2017	The Childhood Trauma Questionnaire (CTQ; 62) - Childhood emotional abuse	OR=2.72	S-M	High childhood emotional abuse was associated with premature termination of treatment

Suicide attempts				
Wnuk, 2013	Lifetime-Suicide Attempts Self-Injury Count (L-SASI; 63)	OR=1.17 (*)	S	Higher number of lifetime suicide attempts significantly predicted dropout.
Rusch, 2008	Lifetime Parasuicide Count (LPC; 64)	B=-0.31 (*)	M	Lower number of lifetime suicide attempts was associated with non-completers and significantly predicted dropout
Beginning outpatient treatment with prior inpatient therapist Smith, 1995		x^2 = 3.74 (*)		Not continuing with the hospital therapist in the community was associated with increased dropout in the univariate analysis
Prior inpatient treatment Smith, 1995		x^2 = 4.50 (*)		Referral from long-term inpatient unit was associated with increased dropout in univariate analysis

*significant at the =<0.05 level; **significant at the =<0.01 level;

S = Small; M = Medium; L = Large; x^2 = Pearson's chi-square; *r* = Pearson Correlation; β = Standardized regression coefficient; B = Unstandardized regression coefficient; N/R = not reported; SFT = Schema focused therapy; TFP = Transference focused psychotherapy; OR = Odds Ratio; HR = Hazard Ratio.

3.4. Therapeutic Process Correlates and Predictors of Treatment Non-Completion

Key findings from studies that explored the relationship between non-completion and therapeutic process variables can be found in Table 3.

3.4.1. Therapeutic Processes

Barnicot et al. (44) explored treatment processes in relation to dropout. They found that less frequent use of DBT skills at any timepoint across a year was significantly associated with an increased likelihood of dropout from DBT, whereas the perceived treatment credibility and the therapeutic alliance with the DBT therapist were not significantly associated with treatment dropout after adjusting for other treatment processes (44). These findings are in contrast with Wnuk et al.'s (40) and Spinhoven et al.'s (34) results which reported that poor therapeutic alliance (40) and the perceived negative quality of the therapeutic alliance (34), as perceived by therapists and patients at early treatment significantly predicted dropout. Further, Yeomans et al. (1994) found that weaker therapist contribution to the contracting process, lower quality of contracting and weaker therapeutic alliance significantly correlated with treatment non-completion (46). However, neither the California Psychotherapy Alliance Scale (CALPAS) nor the Contracting Rating Scale (CRS) are validated measures (46). Additionally, both the therapist score and CALPAS TUI remained significant predictors of treatment length in a regression analysis, but the results need to be interpreted with caution due to the small sample size (46).

Steuwe et al. (38) found a medium effect for the association between a change of therapist between DBT-briefing and start of treatment with a significant risk of dropout. Dickhaut and Arntz (39) compared individual and group schema focused therapy and suggested that the risk of dropout seemed to increase with the group format. However, ‘group format’ was not validly measured, which limits the interpretation of this finding.

Table 3. Therapy-process correlates and predictors of treatment non-completion

Variables Author (year)	Measure	Association (significance level)	Effect size	Key Findings
Change in therapist Steuwe, 2017	Change in therapist between DBT-briefing and start of treatment	*r* =0.38 (*)	M	A change of therapist between DBT-briefing and treatment was associated with a significantly high risk of drop-out
Use of DBT skills Barnicot, 2016	Self-report questionnaire nr of days in past week used each of the 4 skills types	OR=0.92 (*)	S	Less frequent use of DBT skills at any timepoint was significantly associated with increased likelihood of dropping out of DBT
Therapeutic alliance Wnuk, 2013	Working Alliance Inventory Short Form (WAI-SF; 65)	OR=0.96 (*)	S	Poor therapeutic alliance was associated with and predicted dropout
Therapeutic alliance with DBT therapist Barnicot, 2016	Scale to Assess Therapeutic Relationship in Community Mental Health Care: Patient Version (STAR-P; 66)	OR=0.22	N/S	Treatment alliance and perceived treatment credibility were not independently associated with treatment dropout
Perceived treatment credibility of DBT treatment Barnicot, 2016	Treatment Credibility Scale (67)	OR=0.26	N/S	
Perceived quality of therapeutic alliance Spinhoven, 2007	Working Alliance Inventory (WAI; 68) - Ratings of patients (WAI-P) and therapists (WAIT-T) at early treatment	HR=0.77 (*) WAI-P HR=0.55 (*) WAI-T	S S	Perceived negative quality of the therapeutic alliance as perceived by both patients and therapists at early treatment (3 months) was a significant predictor of dropout
Therapeutic contract Yeomans, 1994	California Psychotherapy Alliance Scale (CALPAS; 69) - Therapist	*r*=0.48 (*)	M	Weaker therapeutic alliance measured by the CALPAS TUI was significantly correlated with treatment non-

	Understanding and Involvement (TUI) subscale			completion
	Contract Rating Scale (CRS; 70) - Therapist contribution to contract - Total contract score	*r*=0.64 (**) *r*=0.55 (*)	L M	Weaker therapist contribution to the contracting process and lower quality of contracting were significantly correlated with non-completion
		r_s=0.47 (*)	M	Therapist contract and CALPAS significant predictors of length of treatment
Group format Dickhaut & Arntz, 2014	N/R	N/R	N/R	Dropout risk seemed increased with the group format compared to the individual SFT

*significant at the =<0.05 level; **significant at the =<0.01 level;

S = Small; M = Medium; L = Large; N/S = non-significant; N/R = not reported; *r* = Pearson Correlation; r_s = Spearman Rank Correlation; β = Standardized regression coefficient; B = Unstandardized regression coefficient; OR = Odds Ratio; HR = Hazard Ratio; SFT = Schema focused therapy; DBT = Dialectical Behaviour Therapy.

3.5. Quality Assessment and Risk of Bias

The results of the quality assessment and risk of bias for each study can be found in Table 4. The quality of the studies was variable, with 17% of the 145 total items were rated as ‘not adequately covered’, whereas 21% were rated as ‘adequately covered’ and 62% were rated as ‘well covered’. Therefore, 83% of the included studies were generally of at least adequate quality and were subject to minimal bias.

The risk of bias in the domain of sample selection was minimal, with only two studies rated as ‘adequately covered’ (32, 47). Webb’s sample comprised of patients in acute crisis that the wider Community Mental Health Teams were not able to cope with (32). Further, in Perroud’s study, only patients who were at highest risk were given priority as the number of places in treatment was limited (47). Therefore, these two studies suggest the presence of a small sampling bias. Most studies described their samples well in terms of demographic characteristics, socio-economic factors and other relevant clinical characteristics, such as medication use, co-morbidities or childhood abuse. Two samples only provided information on age and gender which was rated as ‘not adequately covered’ (32, 45/46). It is acknowledged that a large proportion of participants (90.2%) were female, which may have increased sampling bias. Nevertheless, having an equal gender spread across studies did not form part of the quality assessment, as several therapies for BPD were originally developed for female patients (i.e. DBT).

The quality assessment revealed that the most prominent risk of bias was in the domain of using an adequate method for measuring non-completion. The risk of bias was assessed as moderate with one study rated as ‘adequately covered’ (33) and seven studies rated as ‘not adequately covered’ (34, 35, 39, 43, 45, 46, 47). Whilst Black’s study clearly defined and described non-completion, it was not rated as adequate or justified as participants who did not attend the last assessment time were still considered non-completers even if they attended and engaged in all STEPPS sessions (33). This highlights the issue of bypassing the concept of ‘treatment dosage’ and defining non-completion as a dichotomous concept. Two studies did not describe nor define the concept (39, 43), whereas the remainder studies which investigated long-term treatments, provided unclear definition of non-completion, such as ‘termination against therapist advice’ (45, 46) and ‘mutually agreed termination’ (34, 35).

Minimal risk of bias was evident regarding measures of associated variables, with only four studies rated as ‘adequately covered’, due to failing to provide psychometric information on the measures employed (42, 43, 45, and 46). The interventions provided enough detail for replication, with only five studies being rated as ‘adequately covered’ due to a lack of information on the supervision provided or fidelity and compliance checks (32, 33, 38, 39, 43). Only one study was rated ‘less than adequately covered’ due to a lack of enough information on the adapted DBT treatment (41). In terms of design, only one of the eight studies that employed longitudinal designs did not have

an adequate and justified follow-up period (43). Three studies were rated as ‘adequately covered’ as it would have been preferable to have longer than 6 months follow-up period given the nature of long-term interventions (39, 45, 46) and the reported nature of increasing dropout rate by every 3 months during the two years of intervention (45, 46).

Other sources of bias and limitations of quality were identified in the domain of sample size and handling of missing data and dropouts. The majority of studies were potentially underpowered given the nature of analysis employed (32, 37, 38, 45, 46) or authors did not take any statistical measures to minimise the bias (41, 42, 43, 44). In addition, many studies did not record reasons for dropout and/or missing data and no statistical steps were taken to reduce bias, such as carrying out intent to treat or dropout vs. completer analysis, and were therefore rated as ‘not adequately covered’ (33, 37, 41, 43, 45, 46). Therefore, this increases the likelihood that Type I and Type II errors may have inflated the findings.

In the randomised controlled trials, three studies were rated as ‘well covered’ in terms of blinding procedures and extraneous variables (34, 35, 40), whereas only Black’s study was less than adequately covered as no information was provided on blinding procedures (33). Groups were similar on baseline key variables; however, the control group was not adequate as it lacked group intervention equivalence and there were no further attempts to control other extraneous variables (33).

Table 4. Quality Assessment and Risk of Bias

First Author, Year	Design	Sample Selection	Description of Sample	Definition of Non-Completion	Measure of Associated Variable	Intervention	Follow-Up	Missing Data/ Dropout	Sample Size	Appropriate Analysis	Blinding	Extraneous Variables
Webb, 2009	C	+	-	++	++	+	N/A	+	-	++	N/A	N/A
Black, 2009	L	++	++	+	++	+	++	-	++	++	-	+
[a]Spinhoven 2007	L	++	++	-	++	++	++	++	++	++	++	++
[a]Arntz, 2015	L	++	++	-	++	++	++	++	++	++	++	++
Kroger, 2014	C	++	++	++	++	++	++	++	++	++	N/A	N/A
Landes, 2016	C	++	++	++	++	++	N/A	-	-	++	N/A	N/A
Steuwe, 2017	C	++	++	++	++	+	N/A	++	++	++	N/A	N/A
Dickhaut, 2014	L	++	++	-	++	+	+	++	-	++	N/A	N/A
Wnuk, 2013	C	++	++	++	++	++	N/A	+	++	++	+	++
Carmona i Farres, 2018	C	++	++	++	++	-	N/A	-	+	++	N/A	N/A
Rusch, 2008	C	++	++	++	+	++	N/A	+	+	+	N/A	N/A
Soler, 2008	L	++	++	-	+	+	-	-	+	+	N/A	N/A
Barnicot 2016	L	++	++	++	++	++	++	+	+	++	N/A	N/A
[b]Smith, 1995	L	++	-	-	+	++	+	-	-	+	N/A	N/A
[b]Yeomans 1994	L	++	-	-	+	++	+	-	-	+	N/A	N/A
Perroud 2010	C	+	++	-	++	++	N/A	+	++	+	N/A	N/A

L = Longitudinal; C = Cross-sectional; ++ =Well-Covered; + = Adequately Covered; - = Not Adequately Covered; N/A = not appropriate; *a* = data yielded from the same Dutch sample; *b* = data yielded from the same North American sample.

4. Discussion

4.1. Summary of Results

The current review sought to summarise and critically evaluate the evidence for the relationship between treatment non-completion and various clinical, psychological and therapeutic process variables, as well as to identify the way treatment non-completion is defined in adults with a borderline personality disorder (BPD) diagnosis.

The average treatment non-completion rate was 38.2% across 14 samples. This is greater than that obtained in a previous review of psychotherapies for borderline personality disorders (23), where the mean attrition rate was 29% for interventions of 12 months or longer and 25% for shorter duration interventions. However, it is lower than the dropout rate of 47% identified in the meta-analysis of dropout from psychotherapy (3). The average non-completion rate also varied according to country of study, ranging between 19.91% (Switzerland) to 51% (USA). The wide range of mental health service provision, attitudes towards psychotherapy and cost of psychotherapy vary across the countries (71; 72), which may have influenced non-completion rates. Treatment non-completion rates were also lower in inpatient settings, which contrast with findings from previous reviews that did not find an association between treatment settings and BPD completion rates (23). However, the current review included a small number of studies that were based in inpatient settings, which limits the generalisability of findings to all inpatient settings.

There was a wide variability in the way treatment non-completion was defined, which is in line with previous research results (7). This finding was reflected in the relatively poor quality in defining the outcome variable, which may have potentially increased risk of bias. In outpatient settings where DBT was delivered, there seemed to be the highest consistency in definition, which was defined as missing 4 consecutive appointments. In inpatient settings, non-completion was captured in a more conservative way, such as either not completing the entire course of intervention or leaving before the set discharge date. This discrepancy may reflect different BPD sub-types but also the diverse needs met by the various treatment types and settings, and by what may be considered appropriate termination of treatment. Other studies provided either a subjective definition or no definition at all, which makes it difficult to draw any consistent conclusions if the main study variable is not clearly operationalised and not explicitly defined *a priori.*

Regarding socio-demographic variables, the current review found evidence that age and education were associated with non-completion (37, 45, 47). This is in line with McMurran et al.'s (2010) review which found similar results that younger age and lower educational level were related to treatment non-completion. Previous reviews identified lower competence in skills necessary for therapy (7) and commitment to change (23) as strong correlates. The results of the current review reflect these findings; particularly that experiential avoidance was associated with and predicted non-completion (42). However, evidence also showed that other factors were related to

treatment non-completion, including being in the pre-contemplation stage (43), having high external motivation and low internal motivation (32), as well as emotional and experiential avoidance (37; 42). Taken together, it could be concluded that lower levels of problem recognition and competency (i.e. higher avoidance) appear to be related to treatment non-completion. The current review also found evidence to suggest that baseline anger, hostility and impulsivity predicted non-completion of treatment in multiple regression models (33, 34, 45), which reflects conclusions from previous reviews, particularly in relation to impulsivity (23). This finding also underpins the impact of an invalidating environment on emotional expression ability and it highlights the importance of increasing the capacity to tolerate distress as paramount for treatment engagement and completion (18).

The current review revealed some diverging evidence in relation to associations between treatment non-completion and other clinical and psychological variables, including history of childhood abuse and lifetime suicide attempts. Childhood emotional abuse was a strong correlate across a short term intervention in an inpatient setting (38), whereas childhood physical abuse predicted non-completion across a 3-year intervention in an outpatient setting (35). The studies differed in treatment setting, duration and focus of therapy, therefore, the studies may not be directly comparable due to the dissimilar methodologies. Nevertheless, childhood abuse is likely to significantly contribute to disorganised/insecure attachment styles in adulthood (73). This is then likely to impact on the therapeutic relationship

and on triggering traumatic transference reactions of being revictimized by drawing the therapist into unconscious abandonment and rejection re-enactments (20). The therapist's expressions of empathy and attachment might be experienced as unsafe and threatening, and if not addressed appropriately, the therapeutic relationship might be hindered with associations of abuse, leading to premature termination as a self-protection mechanism.

In contrast, lower levels of lifetime suicide attempts predicted non-completion (42), which is consistent with findings from outpatient psychotherapy for BPD (21). However, patients with higher number of lifetime suicide attempts also predicted non-completion (40). This discrepancy may be attributed to differences in treatment settings, inclusion criteria and sample characteristics. For example, Wnuk et al.'s (2013) sample was significantly larger which may have led to increased power to detect an association as well as including both suicidal and non-suicidal self-injurious behaviour (NSSI) as an inclusion criterion (40). Additionally, Rusch et al. (2008) argued that their sample may have belonged to a subtype of BPD associated with high anger and emotional instability but low suicidality, and that the externalising 'angry' style of coping may have been protective against suicidality in an inpatient setting (42). The link between lifetime suicide attempts and treatment non-completion in people with a BPD diagnosis seems to be anchored in the distress intolerance resulting from growing up in invalidating environments (18) and from disrupted/disorganised attachment

styles (17). Without a capacity to tolerate distressing feelings, the distress is often externalised through behaviours that involve risk and self-harm. Patients are likely to distance themselves when they get close in the therapeutic relationship, either by dissociating as a way to disengage and/or expressing distress through suicide attempts (20). This might also partly explain how both low and high levels of lifetime suicide attempts may predict treatment non-completion.

In terms of therapeutic process variables, the findings of the present review found conflicting results. There was no association between therapeutic alliance, treatment credibility and treatment non-completion (44), whereas Wnuk et al. (2013) and Spinhoven et al. (2007) found that therapeutic alliance and perceived quality of the therapeutic alliance respectively, predicted treatment non-completion (40, 34), which more closely reflect findings from previous reviews (23). It is possible that the use of the same measure (i.e. the Working alliance inventory) may have increased the reliability of their findings (40, 34). A change in therapist and less frequent use of DBT skills were associated with increased risk of non-completion; however, each of these variables were separately investigated by only two of the included studies, which limits the strength of the evidence base.

It is important to note that there are several explanations for the discrepancies between the findings of the present review and those of previous reviews. McMurran et al.'s (2010) systematic review included all types of personality disorder (7), while Barnicot et al.'s (2011) review focused

on treatment completion rather than non-completion (23). Neither of these two reviews carried out a formal quality assessment of the included studies' methodologies. Although Barnicot et al. (2011) conducted a quality assessment; this was not based on a validated quality assessment tool (23). Therefore, these factors could impact on the outcome of the reviews.

4.2. Strengths and Limitations

The current review has several strengths, including the use of the umbrella term 'treatment non-completion' to reflect the multi-factorial processes and reasons for dropout explored in the BPD literature. Further, the systematic review included only psychotherapies shown to be effective for BPD, which may have helped not inflate the high dropout rates due to ineffective treatments (23). In addition, it is the first systematic review to formally assess the quality and risk of bias, and to explicitly explore the relationship between clinical, psychological, and therapeutic processes variables and treatment non-completion in patients with a BPD diagnosis. The registration of the *a priori* review protocol aimed to reduce publication bias and to improve its overall quality. The review's ability to draw robust conclusions is however restricted by the methodological quality of the included studies. It is important to note that although the studies were of relatively high quality overall, treatment non-completion definition was not adequately addressed, therefore carrying some risk of bias. The methodological quality assessment was rated by two researchers, increasing the inter-rater reliability of the process. However, it is important to note that a moderate number of studies may have

been underpowered due to small sample sizes and may have carried a risk of bias in terms of handling missing data and dropouts.

The review also has several limitations. Firstly, the heterogeneity of studies, measures, settings and definitions of outcomes prevented the use of a meta-analytic approach to the data. Half of the studies were cross-sectional, and several longitudinal studies did not have adequate follow-up periods. For example, it would have been useful for these longitudinal studies to have follow-up periods longer than 6 months, given the long-term interventions (39) and the incremental increase of dropout every 3 months during the 2 years of treatment (45, 46). Many variables explored in the review reflect factors which may fluctuate in time (e.g. symptom complexity; therapeutic processes). Therefore, the studies may not have been able to adequately capture any significant changes of such variables which may be prone to fluctuating in time. This reflects Barrett et al.'s (2008) view of attrition as a multi-factorial and dynamic process (1). Therefore, the outcome of more static variables such as childhood abuse and number of lifetime suicide attempts could be interpreted with more confidence than the ones subject to fluctuations over time.

Most of the data was correlational in nature rather than predictive, which limits the ability to infer causality. Further, studies employed different measures when investigating the same variable, leading to different reporting of association levels and effect sizes. This made it difficult to draw conclusions about the comparability of the effect size interpretation. Further,

it is acknowledged that while the 'AHRQ' tool that was used to assess quality and risk of bias has been developed and widely used in healthcare research, the altered version has not been validated.

It is further acknowledged that utilising the term 'treatment non-completion' is relatively arbitrary and subjective, and even though it may still be viewed as a dichotomous outcome, it is hoped that the term attempted to encompass the dynamic processes and to provide clarity in the manner in which the results of this review were presented. The choice to include only evidence-based treatment for BPD, albeit sound, may have its inherent limitations. As Bender (2011) points out, the effectiveness of these interventions shown in RCTs is flawed as it implies that one improvement of one symptom is deemed sufficient as indicator for clinical effectiveness (10). In addition, the follow-up periods of many manualised approaches range between 6 months and 1 year, making it difficult to study the maintenance effects (10).

4.3. Implications for Research

Previous reviews (7, 23) highlighted the fact that few studies clearly defined what they meant by treatment non-completion. This was echoed by the results of the current review, with the wide variability of definitions. Therefore, it is unclear whether the varying definitions clearly reflected the same processes. It is imperative for researchers to clearly define *a priori* what is classed as 'treatment non-completion'. It is hopeful to know that a recent tool has been developed specifically for attrition and retention in treatment for

BPD (74). It may be useful for validation studies to be conducted in various settings, for different treatment lengths and types of interventions. It may also be useful for studies researching attrition and retention in BPD to use a consistent and validated measure so that direct comparisons can be made across studies in the future.

It may also be useful to conduct qualitative studies in order to explore patients' perceptions of their problems and their beliefs about the treatment on offer (7). In addition, qualitative methods might allow the exploration of further perceived barriers of treatment non-completion, particularly concerning service-related variables. As highlighted by McMurran et al. (2010), neither of these factors is captured by the current literature on treatment non-completion in BPD, which largely employs quantitative methods (7).

4.4. Implications for Clinical Practice

Based on the findings of this review, it appears that symptom complexity, childhood abuse, the ability to recognise problems and to deal with them competently as well as the therapeutic alliance and the way therapists and patients perceive the quality of the therapeutic alliance are likely to influence treatment non-completion in BPD. Therefore, clinical practice may be enhanced by integrating trauma-informed approaches, which may provide support to the difficulties highlighted by the findings of this review, as advocated by national clinical drivers (75).

It is hoped that the current review contributes to the evidence base highlighting that therapist-patient interaction or therapeutic process variables associated with treatment non-completion are potentially amenable to change. Understanding the multifaceted reasons for treatment non-completion may take away from the stigma placed within characteristics inherent to patients with a BPD diagnosis and rather place the focus on the inter-relational processes within a therapeutic alliance. It is hoped that these will support services to implement a trauma-informed approach as well as a needs-based approach, in accordance with the Transforming Psychological Trauma Skills and Knowledge Framework, promoted by the Scottish Government and NHS Education for Scotland (75).

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Journal Article 2. Empirical Study

Childhood Maltreatment and Post-Traumatic Stress Disorder: the role of Emotion Regulation and Social Connectedness

Short title: *Childhood Maltreatment and PTSD*

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Abstract

Background: Childhood maltreatment exerts a significant effect on the development of adult post-traumatic stress disorder (PTSD). Previous research focused on overall or specific types of childhood maltreatment; however the individual contributions of each maltreatment type and other relevant variables in their relationship with adult PTSD have not been fully explored.

Objective: The current study examined the relationship between childhood maltreatment (emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect) and adult PTSD, and the possible mediating roles of emotion regulation and social connectedness.

Participants and Setting: A cohort of 200 participants attending Phase 1 group intervention for interpersonal trauma (i.e. Survive & Thrive) in a specialised trauma service.

Methods: Participants completed self-report measures on childhood maltreatment, emotion regulation, social connectedness and PTSD. Cross-sectional correlations, multiple regression, mediation and moderation analyses were carried out.

Results: With the exception of childhood physical neglect, all forms of childhood maltreatment were associated with greater trauma. Findings indicated that family and group of choice social connectedness mediated the relationship between childhood emotional abuse and PTSD, while emotion regulation difficulties mediated the relationship between childhood sexual

abuse and PTSD. Further analyses indicated that family social connectedness moderated the relationship between childhood sexual abuse and PTSD symptoms in adulthood.

Conclusions: The study provides further insight into trauma psychopathology in a socio-demographically deprived clinical sample with high incidence of childhood abuse and neglect, highlighting the role of emotion regulation and social connections with family and a group of choice in protecting against PTSD symptoms in adulthood.

Keywords

Childhood maltreatment, emotion regulation, social connectedness, risk factor, PTSD.

Highlights

- The rate of childhood trauma ranged between 63.5% and 89%.
- Childhood trauma exerted a direct effect on PTSD in adulthood.
- Social connectedness with family and with a group of choice mediated the link between Childhood Emotional Abuse and PTSD.
- Emotion dysregulation mediated the link between Childhood Sexual Abuse and PTSD.
- Family connectedness moderated the link between Childhood Sexual Abuse and PTSD.

1. Introduction

Childhood maltreatment (emotional abuse, physical abuse, and sexual abuse, emotional neglect and physical neglect) is defined as “any act of commission and/or omission of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment of commercial or other exploitation, resulting in the actual or potential harm to the child’s health, survival, development or dignity in the context of a relationship of responsibility, trust or power” (WHO, 2014 pg. 9). Global lifetime prevalence rates for childhood emotional abuse (363 per 1000) are consistently reported higher than for physical abuse (226 per 1000), sexual abuse (76 per 1000 among boys and 180 per 1000 among girls), physical neglect (163 per 1000) or for emotional neglect (184 per 1000) (Stoltenborgh et al., 2015). It is important to highlight that most global lifetime prevalence rates are likely to be under-estimates, as many children continue to experience abuse and neglect within the family environment, which may go unreported (Gilbert et al., 2009).

Pratchett and Yehuda (2011) highlight the strong association between childhood maltreatment and adult Post-Traumatic Stress Disorder (PTSD), with more recent research focussing on exploring the mechanisms underlying this relationship. This link suggests that childhood trauma may be considered a life-course social determinant of adult health (Greenfield, 2010). Childhood maltreatment is associated with a number of detrimental psychological and developmental consequences (Cook et al., 2005), such as the disruption of the necessary processes for emotion regulation skills (Gibb, Schofield &

Coles, 2009), secure attachments (Venet et al., 2007), and positive self-concept (Kim & Cicchetti, 2003). Whilst research has focused primarily on childhood physical abuse (CPA) and childhood sexual abuse (CSA), emotional maltreatment has largely been neglected. Nevertheless, childhood emotional abuse (CEA) and neglect (CEN) have been shown to exert lasting consequences on a child's future psychopathology in adulthood similar to CPA and CSA (Egeland, 2009), highlighting the potentially under-researched impact of emotional maltreatment.

Childhood maltreatment has been shown to increase the likelihood of developing a range of mental health difficulties in adulthood such as PTSD (Arata, 2000; Evans et al., 2013), anxiety (Anda et al., 2006), substance use (Lo et al., 2008), or disordered eating (Arias, 2004). Evidence suggests that there is an increased risk of children experiencing multiple forms of maltreatment (Behl et al., 2003), with a greater risk of adult PTSD in individuals with cumulative childhood trauma (Briere et al., 2008; Cloitre et al., 2009). However, the relationship between childhood maltreatment and adult PTSD is multifaceted and complex. For example, there is a difference in the reported prevalence of PTSD in children following CSA and CPA (34%-65%) compared to the prevalence of PTSD in adults who reported maltreatment in childhood (72%-100%). This was suggested to be explained by the fact that the full impact of early childhood abuse may not be realised until adulthood, for example, reaching developmental maturity, which may trigger PTSD symptomatology (Pratchett & Yehuda, 2011).

One way in which childhood maltreatment impacts on adult trauma symptomatology could be through emotion dysregulation. Emotion regulation can be conceptualised as a multidimensional construct that involves 1) awareness and understanding of emotions, 2) acceptance of emotions, 3) ability to control impulsive behaviours and to act in accordance with desired goals and 4) the ability to be flexible in modulating emotional responses as desired in order to meet individual goals (Gratz & Roemer, 2004). The relative absence of all or any of these abilities indicates emotion dysregulation.

Emotion regulation skills are thought to develop in childhood, with research suggesting that individuals exposed to trauma at any age have greater emotion dysregulation than their unexposed peers (Dunn et al., 2018). Additionally, survivors of early-onset chronic interpersonal trauma – where intentional abuse or neglect is perpetrated by one individual onto another - experienced greater emotion regulation difficulties than those with single-event or late-onset trauma (Ehring & Quack, 2010). Chronic childhood maltreatment also disrupts the acquisition of appropriate emotion regulation skills (Burns et al., 2010). Childhood maltreatment has further been linked to neglected children experiencing difficulties discriminating and labelling negative emotions (Shipman et al, 2005), to sexually abused girls experiencing difficulties understanding and regulating emotions (Shipman et al., 2000) and to maltreated children having lower thresholds for recognising angry faces than non-maltreated peers (Pollak & Sinha, 2002).

The quality of early relationships with primary caregivers is also likely to impact on the child's ability to develop adaptive emotion regulation skills (Calkins & Hill, 2007). Attachment theory (Bowlby, 1969) plays a key role in the understanding of childhood trauma effects on adult interpersonal relationships. Research suggests that insecure adult attachment styles are likely to result from childhood maltreatment and may contribute to significant psychological distress later in adulthood (Baer et al., 2006). The relationship between insecure attachment, and in particular fearful attachment and PTSD has been well established in the literature (Woodhouse, Ayers & Field, 2015), with fearful attachment developing in the context of childhood emotional abuse and neglect (Schimmenti & Bifulco, 2015).

Emotion dysregulation that arises during childhood maltreatment and continues throughout the lifespan may impact on the increased risk of adult psychological difficulties (Street et al., 2005; Tull et al., 2007). Furthermore, victims of childhood maltreatment might be at a higher risk of revictimization which, combined with disruptions in attachment relationships, appear to increase the risk of PTSD in adulthood (Briere et al., 2008; Cloitre et al., 2009). Emotion dysregulation may result in difficulties processing trauma through the maintenance of heightened fear and distress, which can contribute to the development of PTSD (Ehlers & Clark, 2000). For example, adults exposed to repeated childhood maltreatment have been found to display greater trauma-related guilt and shame (Street et al., 2005), which was related to increased PTSD symptomatology. These studies provide

evidence for the presence of emotion dysregulation as an underlying mechanism of adult PTSD in childhood trauma survivors.

Childhood maltreatment also reduces the ability to form and maintain meaningful and healthy relationships with others in adulthood (Colman & Widom, 2004; Wilkinson, 2016). Research highlights that experiencing childhood emotional and physical abuse is predictive of lower levels of emotional closeness to family in mid-life (Savla et al., 2013). Several theories suggest that social connectedness or the experience of feeling emotionally close and connected to others, may lessen the risk of negative effects of trauma. The conservation of resources theory posits that social resources, such as social connectedness and social support may act as buffers in coping with negative life events (Hobfoll & Lilly, 1993). Likewise, the stress buffering hypothesis points to the role of meaningful social relationships in protecting against stressful life events (Cohen & Willis, 1985). Research highlights the strong relationship between social connectedness and PTSD, with social connectedness moderating the relationship between PTSD and health outcomes among older adults, such that individuals suffering from PTSD appear to experience better health when they are socially highly connected (Schwartz & Shrira, 2019). Additionally, loneliness was found to mediate the relationship between childhood trauma and PTSD, with those who had a lower level of loneliness experiencing better mental health and less severe PTSD symptomatology (Shevlin et al., 2015). Evidence suggests that lower perceived social support is associated with more severe PTSD symptoms in survivors of childhood sexual abuse (Fletcher et al., 2017).

Similarly, lower levels of perceived social support predicted PTSD (Ozer et al., 2003). A study identified that lower levels of perceived social support sub-types, such as “appraisal support” and “self-esteem” predicted greater PTSD symptoms in victims of childhood sexual abuse (Hyman et al., 2003). Further, the effect of perceived social support from friends and family on predicting trauma symptoms in adulthood revealed gender differences (Evans et al., 2013). For instance, as the severity of child maltreatment increased, so did the trauma symptoms in both men and women, however greater perceived social support from friends, but not family, predicted lower trauma among women, whereas this effect was replicated with perceived social support from both friends and family among men (Evans et al., 2013). They further highlight that as the severity of childhood maltreatment increased the buffering effect of perceived social support from family on trauma symptoms decreased for women (Evans et al., 2013). Taken together, these findings suggest that social connectedness may be related to both PTSD and childhood trauma, however it remains unclear whether the interaction is via mediation or moderation.

1.1. Aims of the Study

The current study aimed to test a theoretical model (mediation/moderation) that explores the relationship between childhood trauma and adult PTSD symptomatology, as diagnosed by the DSM-5 (APA, 2013), and whether it may be impacted by emotion regulation skills and/or social connectedness. Consistent with previous research on the well-

established link between childhood maltreatment and PTSD (Pratchett & Yehuda, 2011), it was hypothesised that childhood maltreatment severity will be associated with PTSD. Evidence suggests that certain types of childhood maltreatment may be more pertinent in difficulties with emotion regulation, with research pointing toward childhood sexual abuse (Shipman, 2000; Kim & Chicchetti, 2010) and neglect (physical and/or emotional) (Shipman et al., 2005). Further, the role of emotion dysregulation as a contributor in the development of PTSD has been highlighted in the literature (Street et al., 2005; Tull et al., 2007). Therefore, it was hypothesised that emotion dysregulation will be associated with childhood sexual abuse, emotional and physical neglect, and that it will be associated with and predictive of greater trauma symptomatology in adulthood.

Despite evidence suggesting that emotion dysregulation and social connectedness are independently related to childhood trauma and to PTSD, no study to date has examined the impact of these variables within the same theoretical model. Research often focuses on one type of trauma or an overall measure of trauma, and on perceived social support or other proxies of social connectedness. Therefore, there is a case for investigating the individual contributions of different types of trauma and different types of social connectedness within a theoretical model. As such, it was hypothesised that emotion dysregulation and social connectedness will mediate the relationship between childhood maltreatment and PTSD in adulthood. It was also hypothesised that an interaction would occur, such

that associations between severity of childhood maltreatment and PTSD would be significant at lower levels of social connectedness.

2. Material and Methods

2.1. Participants and Procedure

The study employed a quantitative, within-subject, cross-sectional design. The data was collected between October 2016 and September 2019 from an NHS specialised trauma service in Scotland based within an NHS outpatient psychological therapies service. Ethical approval was granted by the University of Edinburgh Research Ethics Committee (REC), and NHS Tayside Information Governance (see Appendices H and I).

The participants were comprised of a clinical sample of adults who were referred to Survive & Thrive (S&T) groups. S&T is a 10-week group-based intervention aimed at individuals who have experienced interpersonal trauma. The manualised approach is based on the three-phased model for interpersonal trauma (Herman, 1992). The aim of the psycho-educational group is to facilitate safety and stabilisation. Participants were referred by a number of statutory mental health services and third sector organisations. Participants were invited to complete pre-treatment questionnaires measuring childhood trauma and life events, and additional measures on psychological distress, PTSD symptoms, emotion regulation skills, and social connectedness at the beginning, middle and end of the group intervention.

Inclusion criteria for S&T were childhood and/or adulthood experience of interpersonal trauma, possible suicidal behaviour and aged over 18. Exclusion criteria included current inpatient admission, intellectual disability and insufficient English abilities to engage in a group-based intervention, and

individuals who are known perpetrators of abuse. Participants were included in the current analysis if they completed at least one session of the group and if they completed the pre-group questionnaire (i.e. CTQ). A total of 834 patients were referred to S&T during the inclusion period (October 2016-September 2019) and 271 (32.5%) started treatment. Participants who did not complete any questions on one or more measures were excluded from the current analysis (n=71), as this would constitute missing data >20%. The final sample consisted of 200 participants.

2.2. Measures

Demographic information was obtained from a self-report Para-Suicide Audit, which contained questions related to age, gender, substance use, suicide ideation and suicide attempts, psychiatric diagnoses, current and/or past psychiatric input, childhood and adulthood trauma experiences, and postcode, which was subsequently used to calculate the Scottish Index of Multiple Deprivation (SIMD) rank. The SIMD provides a relative measure of deprivation using geographical areas or 'datazones' and it combines 38 indicators across 7 domains: income, employment, health, education, skills and training, housing, geographic access and crime (SIMD; Scottish Government, 2016). The SIMD is considered to be more robust than self-reported measures of socioeconomic deprivation (Wakefield et al., 2016) (see Appendix J for all study measures).

The Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998) is a 28-item self-report questionnaire and it provides information on childhood abuse across 5 domains: emotional, physical, sexual abuse, emotional and

physical neglect. Participants are asked to rate statements such as “I did not have enough to eat”, on a five-point scale, where 1= “Never True” and 5 = “Very Often True”, with higher scores indicating greater levels of childhood maltreatment, based on the recommended cut-off scores (Bernstein & Fink, 1998). There is an additional minimization/denial scale which is calculated from three items. These items were collected but not included in the final analysis. CTQ has shown to have good internal consistency on each of the subscales (Bernstein, Fink & Handelsman, 1994; Bernstein & Fink, 1998) and it is suitable for a range of clinical populations (Spinhoven et al., 2014). In the current sample, each subscale displayed good internal consistency: CEA (.88), CPA (.85), CEN (.85), and CPN (.82) with the exception of CSA, which showed fair internal consistency of .70.

The Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5; Blevins et al., 2015) is a 20-item self-report measure used to assess post-traumatic stress disorder symptoms. Participants were asked to rate the degree to which they were bothered by the ‘stressful experiences’ in the past month, on a five-point scale, where 0 = “Not at all” and 4 = “Extremely”. A total score of symptom severity is obtained from the sum of all items, with higher scores indicating greater symptom severity. A score of at least 33 out of 80 is considered a probable clinical diagnosis of PTSD (VA National Centre for PTSD, 2014). The PCL-5 has demonstrated good internal consistency (α=.94) and good test-retest reliability (*r*=.82) (Blevins et al., 2015). In the present study, the internal consistency was good (α=.89).

The Difficulties in Emotion Regulation Scale – Short Form (DERS-SF; Kaufman et al., 2016) is a short 18-item self-report questionnaire. It comprises of six subscales which measure various dimensions of emotion regulation: non-acceptance of emotional response, difficulties engaging in goal directed behaviour, difficulties controlling impulsive behaviours, lack of emotional awareness, limited access to emotion regulation strategies and lack of emotional clarity. Participants are asked to rate the frequency in which statements apply to them on a five-point scale, where 1 = “Almost Never” and 5 = “Almost Always”. The DERS-SF shows good internal consistency of α=.87 with the original version it is based on (i.e. DERS, Gratz & Roemer, 2004). In the current sample, the internal consistency estimate of DERS-SF was .85.

Social connectedness was assessed using the Group Identification Scale (GIS; Sani et al., 2012). The self-report questionnaire contains a 4-item Family subscale (GIS-F), a 4-item Community subscale (GIS-C), and a 4-item chosen in-group/other subscale (GIS-O). The measure assesses the degree to which participants have a sense of belonging to and a sense of shared commonality with each of the three groups. Participants were asked to specify the degree to which they agreed or disagreed with each item on a seven-point scale, where 1 = “Strongly disagree” and 7 = “Strongly agree”. Higher scores on each subscale are indicative of greater levels of identification. Average responses for each group (family, community and other) were calculated by taking the mean of the four items. The GIS has been shown to have excellent reliability (α = .92; Sani et al., 2015).

Cronbach's alpha in the current sample for the GIS-F was .87, for the GIS-C .93, while the internal consistency for GIS-O was .95.

2.3. Statistical Analyses

Analyses were conducted using Statistical Package for Social Sciences (SPSS) software version 25 (IBM Corp., 2016). Preliminary exploratory analyses investigated outliers, descriptive statistics and tests of normality. Relationships between study variables were explored using t-tests, analyses of variance (ANOVA) and bivariate correlations. Post-hoc differences between significant variables were investigated using Bonferroni tests. Linear regression analysis was then conducted by using the simultaneous forced 'entry' method to explore predictors of PTSD. This method is considered the most appropriate for testing theory and building theoretical models (Field, 2018). Mediation analyses were used to test the hypothesised indirect effect (via emotion dysregulation and social connectedness) of childhood trauma (i.e. X) on PTSD (i.e. Y). The mediation (model 4) and moderation analyses (model 1) (Hayes, 2017) were conducted using the PROCESS v3.4 add-on for SPSS (Hayes, 2018). Bootstrapping on 10,000 samples (Field, 2018) using bias corrected and accelerated (BCa) confidence intervals of 95% was applied to the mediation and moderation analyses (Preacher and Hayes, 2008). The direct and indirect effects were considered significant when zero is not included within the lower and upper bounds of 95% BCa bootstrapped confidence intervals (CI) (Preacher and Hayes, 2008).

2.3.1. Missing Data - Prior to conducting inferential statistics, the pattern of missing data was explored by carrying out Little's Missing Completely at Random (MCAR) test. The total proportion of missing data in the current study was 0.95% across all cases. Little's MCAR test showed that the data was Missing Not at Random (Little's MCAR test: $x^2(1564) = 1715.288$, $df = 1564$, $p = .004$). Due to the overall small amount of missing data on predictor variables, values were imputed separately per scale using the expectation maximization (EM) algorithm. This produces the maximum likelihood estimation of missing values based on parameters of observed variables, with random errors reflecting the uncertainty of the imputation. Empirical studies suggest that modern alternatives for dealing with missing data, such as single imputations using the EM algorithm or multiple imputation (MI) yield similar estimates and standard errors (Enders, 2017). As the analyses produced no significant differences between running the analyses using EM or running the analyses with the missing data, EM was employed as the more robust method of dealing with the missing data in the current study.

2.3.2. Power Calculations - Mediation analyses use a bootstrapping approach and do not require a specific sample size; however, Fritz & MacKinnon (2007) recommend estimated sample size in order to detect mediated effects. An estimated sample size of 71 was suggested to detect a medium effect size, with a power of 0.8. For the linear regression, post-hoc power analysis was computed using G*power 3 (Faul, Erdfelder & Buchner, 2009), which indicated that based on a sample size of 200, with five predictor

variables (childhood trauma type, emotion dysregulation, group identification scale-family, community and other domains), the study was adequately powered in order to detect a medium effect size of 0.15 set at an alpha level of 0.05 (Cohen, 1992). The current sample size of 200 satisfies requirements for both linear regression and mediation analyses.

3. Results

3.1. Sample Characteristics

The age of the participants ranged from 18 to 67 (*M* = 38.73, *SD* = 12.46), and 86% (n=172) of the participants were female. One hundred and fifteen (57.5%) participants were unemployed and 85 (42.5%) were single. Consistent with the multiple deprivation status of the recruitment site, 103 (51.5%) participants lived in areas ranked as the first three deciles with the highest deprivation levels. Further demographic characteristics of the sample are presented in Table 1.

3.2. Exploratory Analyses

Exploratory analyses identified 0.03% univariate outliers and 0.01% multivariate outliers. As no significant differences were identified by including or excluding outliers, results from the full sample are presented below. There were no significant differences on PTSD between genders (t(191)=-1.03, p = .30), relationship status (F(6, 193)=1.073, p = .38), and SIMD rank (F(10, 189)=.60, p = .80). A one-way ANOVA indicated that there was a significant difference on PTSD between employment status (F(5, 194)=2.73, $p < .05$), with those unemployed having higher scores on PTSD than participants who were employed ($p < .05$). The distribution of all variables was checked for normality using the Kolmogorov-Smirnov test, which indicated that none of the variables were normally distributed, $p < .001$. As such, Spearman's *rho* was used to investigate bivariate correlations.

Table 1
Sample demographic characteristics

		N	(%)
Relationship status	Single	85	42.5
	Married	32	16
	Separated	9	4.5
	Divorced	14	7
	Living with a Partner	35	17.5
	Widowed	3	1.5
Employment status	Employed	62	31
	Unemployed	115	57.5
	Student	18	9
	In training	2	1
	Other	3	1.5
SIMD rank[a]	Most deprived (1)	54	27
	Least deprived (10)	10	5
Self-reported diagnosis[b]	Bipolar Affective Disorder	5	2.5
	Depression	106	53
	Schizophrenia	2	1
	Personality Disorder	19	9.5
	Eating Disorder	7	3.5
	Harmful Alcohol Use Harmful	15	7.5
	Substance Use	6	3
	OCD	5	2.5
	Adjustment Disorder	1	0.5
	Generalised Anxiety Disorder	38	19
	PTSD	53	26.5
	Other	31	15.5
	No diagnosis	36	18
Childhood trauma experienced[b]	Sexual Abuse	100	50
	Physical Abuse	95	47.5
	Emotional Neglect	104	52
	Physical Neglect	57	28.5
	Witnessing Violence	80	40
Adulthood trauma experienced[b]	Sexual Abuse	59	29.5
	Domestic Abuse	98	49
	Stalking	24	12
	Harassment	36	18
	Single Incident of Rape	41	20.5
Previous psychiatric input	Yes	123	61.5
Current psychiatric input	Yes	96	48

[a] Percentages calculated based on the Scottish Index of Multiple Deprivation decile ranks.

[b] Percentages calculated from the total number of self-reported diagnoses, as some participants reported more than one diagnosis and a combination of childhood and adulthood trauma experiences.

3.3. Descriptive Statistics

Means, standard deviations, skewness, and kurtosis across all measures are presented in Table 2. Skewness and kurtosis were found to be acceptable. Overall, participants reported experiencing more severe childhood emotional abuse (*M* = 17.30, *SD* = 5.99) and more severe childhood sexual abuse (*M* = 13.66, *SD* = 8.13) than other forms of maltreatment. The mean group identification score for the 'Family' (*M* = 3.75, *SD* = 1.75) and 'Other' domains (*M* = 3.86, *SD* = 2.02) were higher than for the 'Community' domain (*M* = 2.82, *SD* = 1.54). On average, participants displayed high levels of emotion regulation difficulties (*M* = 62.5, *SD* = 12.10) and high PTSD scores (*M* = 56, *SD* = 13.26).

Table 2
Summary descriptive statistics for all measured variables

Measure	Min.	Max.	Mean	S.D.	Skewness	Kurtosis
CEA	5	25	17.30	5.99	-.488	-.870
CPA	5	25	11.19	5.90	.712	-.700
CSA	5	25	13.66	8.13	.210	-1.63
CEN	5	25	16.05	5.77	-.336	-.792
CPN	5	25	11.04	4.99	.621	-.451
DERS-SF	31	90	62.5	12.10	-.209	-.543
GIS-F	1	7	3.75	1.75	-.129	-.986
GIS-C	1	7	2.82	1.54	.527	-.384
GIS-O	1	7	3.86	2.02	-.465	-.860
PCL-5	10	80	56.00	13.26	-.649	.487

Note. CEA = Childhood Emotional Abuse; CPA = Childhood Physical Abuse; CSA = Childhood Sexual Abuse; CEN = Childhood Emotional Neglect; CPN = Childhood Physical Neglect; DERS-SF = Difficulties in Emotion Regulation Skills-Short Form; GIS-F = Group Identification Scale – Family domain; GIS-C = Group Identification Scale – Community domain; GIS-O = Group Identification Scale – Other domain; PCL-5 = Post Traumatic Stress Disorder Civilian version for DSM 5.

Based on Bernstein and Fink's (1998) recommended cut-off scores to suggest the presence of childhood abuse and neglect, 178 participants (89%) met criteria for emotional abuse (≥9), 127 (63.5%) met criteria for physical abuse (≥8), 132 (66%) met criteria for sexual abuse (≥6), 167 (83.5%) met criteria for emotional neglect (≥10) and 135 participants (67.5%) met criteria for physical neglect (≥8). In the current study, 89.5% of the sample reported cumulative trauma, with 73 participants (36.5%) reporting all five types of maltreatment, 59 (29.5%) reporting 4 types, while 28 individuals (14%) and 19 (9.5%) reporting 3 and 2 types of childhood maltreatment respectively. Further details on childhood trauma are presented in Table 3. In accordance with the recommended score of 33 or above, 190 participants (95%) met the clinical cut-off score for a diagnosis of probable PTSD (VA National Centre for PTSD, 2014).

Table 3
Frequency of childhood trauma types using the Childhood Trauma Questionnaire (CTQ)

Type of Abuse/ Neglect	None or minimal *n* (%)	Low to moderate *n* (%)	Moderate to severe *n* (%)	Severe to Extreme *n* (%)	Total Sample *n* (%)
CEA	22 (11.0)	26 (13.0)	26 (13.0)	126 (63.0)	178 (89.0)
CPA	73 (36.5)	30 (15.0)	27 (13.5)	70 (35.0)	127 (63.5)
CSA	68 (34.0)	12 (6.0)	16 (8.0)	104 (52.0)	132 (66.0)
CEN	33 (16.5)	39 (19.5)	33 (16.5)	95 (47.5)	167 (83.5)
CPN	65 (32.5)	26 (13.0)	37 (18.5)	72 (36.0)	135 (67.5)

Note. CEA = Childhood Emotional Abuse; CPA = Childhood Physical Abuse; CSA = Childhood Sexual Abuse; CEN = Childhood Emotional Neglect; CPN = Childhood Physical Neglect.

3.4. Correlation and Regression Analyses

Bivariate correlations (Spearman's *rho*) for all study variables are displayed in Table 4. All CTQ subscales correlated with one another; however there was no evidence of multicollinearity. CSA was positively correlated with DERS-SF (r = .143, p < .05), suggesting that more severe childhood sexual abuse was associated with greater emotion dysregulation. With the exception of CPN, all forms of childhood maltreatment and DERS-SF were significantly correlated with PTSD scores (range r = .181 to r = .548, p < .05). As CPN did not correlate significantly with PCL-5, it was excluded from further analyses. Group Identification subscales were significantly correlated with PTSD scores (range r = -.207 to r = -.252, p < .01). Therefore, this indicated that greater childhood maltreatment, greater emotion dysregulation, less identification with family and a group of choice but more identification with community was associated with greater trauma symptomatology.

Social connectedness was significantly correlated with CTQ subscales and DERS-SF, such that less identification with family and a chosen group was associated with more severe childhood maltreatment. Group identification across all three domains was negatively correlated with DERS-SF scores (range r = -.295 to r = -.141, p < .05). This indicated that lower group identifications were associated with more severe childhood maltreatment and with greater emotion dysregulation. Other demographic variables, such as employment, SIMD rank and relationship status were not included in the analysis as the current sample consisted of a large

percentage of participants who were unemployed, lived in areas with high deprivation and were single, which may have biased the results of the analysis.

To test the relative strength of variables in predicting PTSD symptoms, the significant correlates of PCL-5 (CEA, CPA, CSA, CEN, DERS-SF, and GIS subscales) were entered into a forced entry linear regression model (see Appendix K). The multiple regression model significantly predicted PTSD, with a large effect size ($F(8, 191)=15.20$, $p < .01$) The model accounted for 36% of the variance in predicting PTSD symptoms (Adj. $R^2=.363$). Of the individual predictors, only emotion dysregulation (DERS-SF) was a significant predictor ($\beta = .554$, $p < .001$).

The standardised residual plots revealed that the assumption of normality and linearity were met. The assumption of homogeneity of variance was also met, as the Durbin-Watson statistic was close to 2. The variance inflation factor (VIF) was less than 3.3 and the tolerance statistic was above .296, suggesting that there was no multicollinearity within the data.

Table 4
Spearman's correlation matrix indicating relationships between variables

Variable	1	2	3	4	5	6	7	8	9	10
1. CEA	1									
2. CPA	.674**	1								
3. CSA	.293**	.336**	1							
4. CEN	.633**	.480**	.185**	1						
5. CPN	.525**	.431**	.270**	.637**	1					
6. DERS-SF	.048	.010	.143*	.006	-.004	1				
7. GISF	-.327**	-.265**	-.049	-.386**	-.245**	-.141*	1			
8. GISC	-.058	.053	.080	.014	.090	-.295**	.120	1		
9. GISO	-.131	-.147*	-.150*	-.192**	-.154*	-.145*	.137	.396**	1	
10. PCL-5	.219**	.146*	.181*	.181*	.116	.548**	-.207**	.252**	-.245**	1

Note. (1) CEA = Childhood Emotional Abuse; (2) CPA = Childhood Physical Abuse; (3) CSA = Childhood Sexual Abuse; (4) CEN = Childhood Emotional Neglect; (5) CPN = Childhood Physical Neglect; (6) DERS = Dysfunctional Emotion Regulation Scale-short form; (7) GISF = Group Identification Scale – Family domain; (8) GISC = Group Identification Scale – Community domain; (9) GISO = Group Identification Scale – Other chosen domain; (10) PCL-5 = Post Traumatic Stress Disorder Civilian Version 5.

* $p < .05$

** $p < .01$

3.5. Mediation and Moderation Analyses

A series of parallel multiple mediation analyses were carried out in order to test the hypothesis that childhood trauma would serve as a predictor of PTSD in adulthood, and that emotion regulation and social connectedness would serve as mediators in this relationship. Emotion dysregulation and social connectedness did not mediate the relationship between CPA and PCL-5 or between CEN and PCL-5, nor were there significant indirect effects found between these variables. Therefore, models investigating the effects of CEA and CSA will be presented below.

The overall CEA model explained 16% of the variance in PTSD, $p < .001$. The model indicated that the total effect between CEA and PTSD was significant ($B = .027$, $SE = .009$, $p < 0.01$, 95% CI [.0087, .0469]), such that high levels of emotional abuse were associated with greater PTSD symptomatology. The direct effect of the relationship between CEA and PTSD became non-significant after controlling for emotion dysregulation and group identification ($B = .017$, $SE = .009$, $p = .07$, 95% CI [-.0017, .0361]). The total indirect effect was significant ($B = .010$, $SE = .004$, 95% CI [.0025, .0206]). The specific indirect effects for the mediation analysis are reported in Table 5. Both Family group identification and Other group identification mediated the relationship between CEA and PTSD (see Fig. 1.). Therefore, in the current study social connectedness with family and a chosen group may serve as protective factors against developing PTSD in adulthood despite childhood emotional abuse.

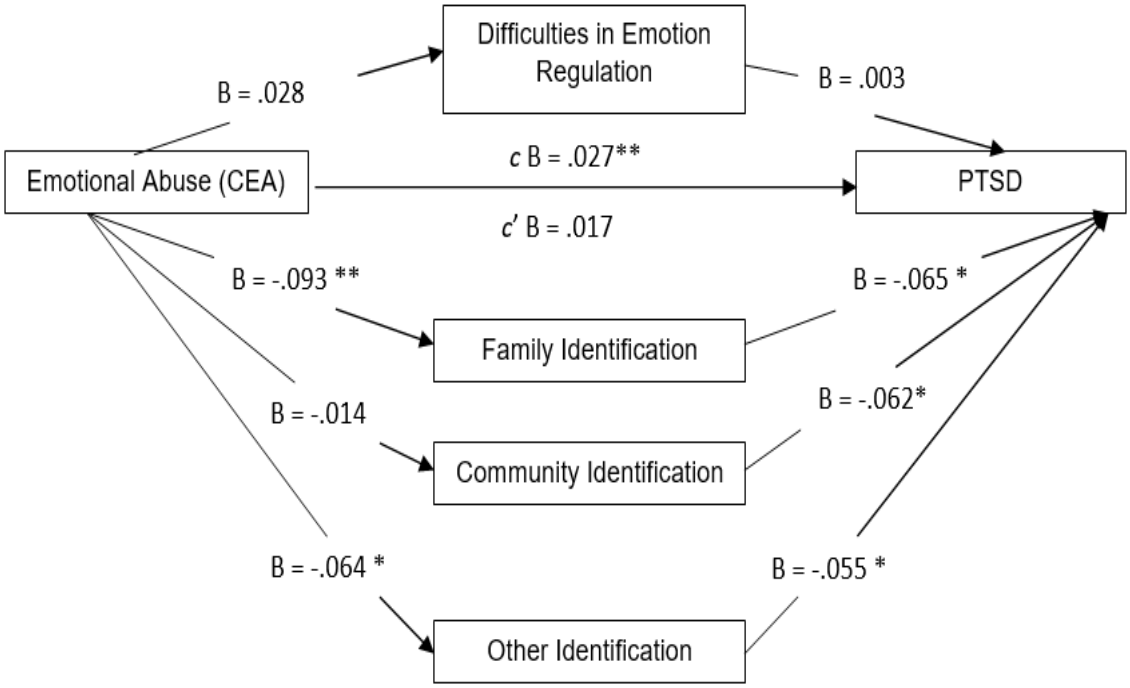

Fig. 1. The parallel mediation model of CEA and PTSD, with Beta coefficient standards shown for each path, where * *p* < .05 and ** *p* < .01

Table 5.
Specific bootstrapped indirect effects of potential mediators

	Indirect effect	Standard Error (SE)	95% BCBCI	
			Lower	Upper
DERS-SF	.0001	.0010	-.0020	.0022
GIS-F	.0061	.0031	.0010	.0130*
GIS-C	.0009	.0018	-.0023	.0051
GIS-O	.0035	.0023	.0000	.0090*
Total Indirect Effect	.0106	.0046	.0025	.0206*

Note. BCBCI = Bias Corrected Bootstrapped Confidence Interval with 10000 samples.
* Significant mediation effect at *p* < .05 where lower and upper BCBCI values do not include zero.

The CSA parallel mediation model indicated clear effects of the proposed mediators, however, scores within 95% BCa CI's crossed zero for the group identification variables. Therefore, it was indicated that moderation might better explain the relationship between childhood sexual abuse and group identifications.

A simple mediation model was explored (See Fig. 2). The analysis revealed that the indirect effect between CSA and PTSD through emotion dysregulation was significant (*B* = .006, *SE* = .003, 95% CI [.006, .013]). The total effect of the relation between CSA and PTSD was significant (*B* = .015, *SE* = .005, *p* < .01, 95% CI [.004, .026]). The direct effect of the relationship between childhood sexual abuse and PTSD became non-significant after controlling for emotion dysregulation (*B* = .009, *SE* = .004, *p* =.061, 95% CI [-.0004, .0184]). The findings suggest that emotion dysregulation fully mediated the relationship between childhood sexual abuse and PTSD symptomatology.

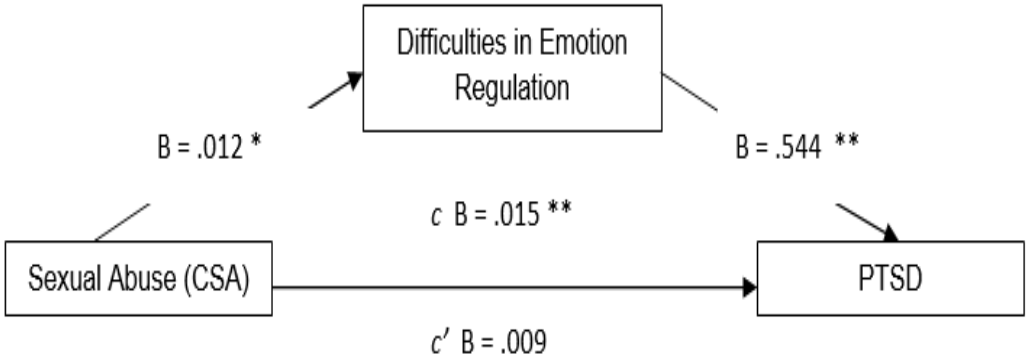

Fig. 2. The simple mediation model of CSA and PTSD, with Beta coefficient standards, where * *p* < .05 and ** *p* < .01

As shown in table 6, the moderation analysis indicated that family group identification moderated the relationship between CSA and PTSD *(b* = -.009, SE_B = .004, *t* = -2.01, *p* < 0.05, 95% CI [-.018, -.0001]). When identification with family was low, there was a significant relationship between CSA and PTSD. As CSA scores increased, lower identification with family was associated with greater PTSD symptoms (see Fig. 3.). The significant moderation indicated that identifying with and having a sense of commonality with family appears to act as a buffer against PTSD among people who experienced severe childhood sexual abuse.

Table 6.
Moderation analysis exploring predictors of PTSD on childhood sexual abuse by family group identification interaction

	b	SE_B	*t*	*p*
Constant	2.86 [2.767, 2.968]	.051	62.74	<0.000
CSA (centred)	.185 [.002, .034]	.008	2.29	<0.05
GIS-F (centred)	-.102 [-.161, -.043]	.029	-3.45	<0.01
CSA x GIS-F	-.009 [-.018, -.0001]	.004	-2.01	<0.05

Note: CSA = Childhood Sexual Abuse; GIS-F = Group Identification Scale Family subscale.

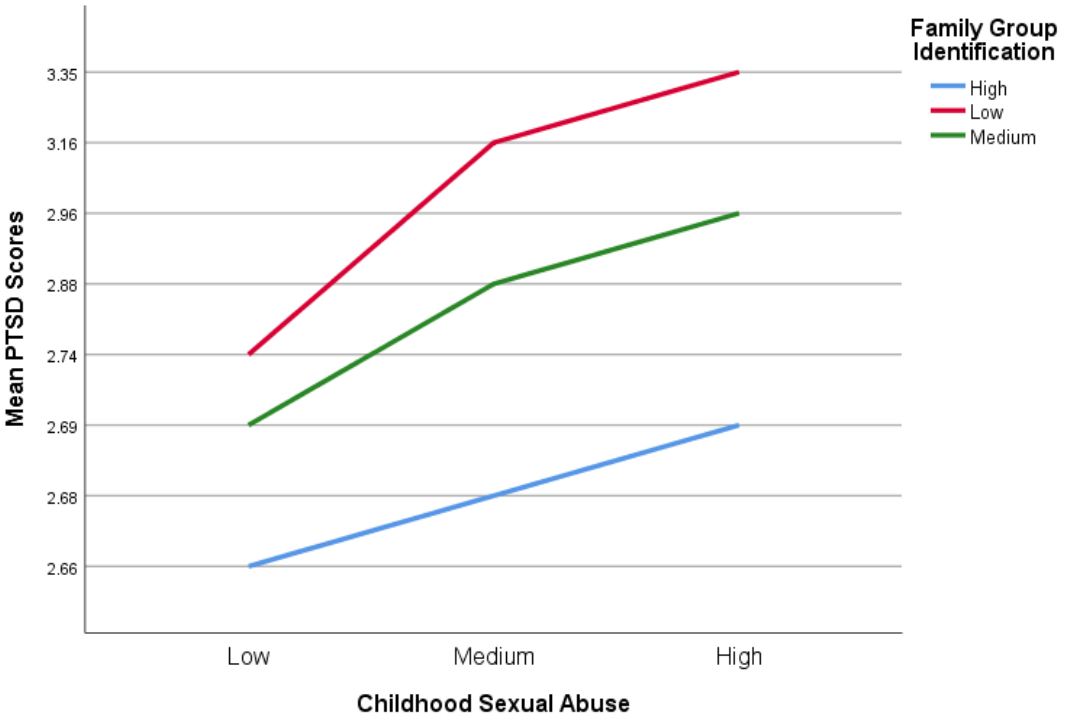

Fig. 3. Simple slopes equation of the regression of PTSD on childhood sexual abuse at low, medium, and high levels of family group identification

4. Discussion

4.1. Summary of Findings

The current study investigated associations and predictors of adult PTSD in a sample of childhood trauma survivors. The study also examined the mechanisms underlying the relationship between childhood trauma types and adult PTSD within a theoretical model. As such, the current study provides further evidence for the role of emotion regulation skills in adults with childhood maltreatment history. The findings also highlight the role of social identifications across different groups within a socioeconomically deprived population with high levels of childhood trauma.

Emotional maltreatment has historically received less attention compared to other types of maltreatment (Egeland, 2009). In the current study, childhood emotional abuse and emotional neglect were the most common forms of childhood maltreatment reported. This is comparable to previous studies which highlight the prevalence of emotional maltreatment and its potential impact on the development of adult trauma symptomatology (Egeland, 2009). Additionally, 89.5% of the current sample reported cumulative trauma experiences, which reflects the high prevalence of cumulative trauma in a clinical sample. The results support findings from previous research on the impact of cumulative trauma on PTSD (Briere et al., 2008; Cloitre et al., 2009). The study identified discrepancies between self-reported trauma on the Para-Suicide Audit and higher childhood trauma rates identified by the CTQ. This discrepancy is likely to reflect processes related to the poor stability of retrospective reporting, such as reliance on cognitive

appraisals of the trauma (Ferguson et al, 2000), but it is also likely to reflect the differences between the two measures. While CTQ is a valid measure, the Parasuicide Audit is not, with the content of the questions likely to have resulted in increased responses of childhood trauma elicited by the CTQ.

Consistent with previous research, results revealed that with the exception of CPN, all forms of childhood maltreatment were positively associated with adulthood PTSD. However, none of the childhood trauma types emerged as significant predictors of adult PTSD. This is inconsistent with previous findings (Spertus et al., 2003) that emotional abuse, physical abuse, sexual abuse and neglect significantly predicted post-traumatic stress symptomatology. However, differences in findings may be partially explained by the chronicity and severity of childhood trauma of the current sample compared with the relatively low frequency of childhood severity in Spertus et al.'s primary care sample.

The second hypothesis was partly supported. Greater emotion dysregulation was associated with greater PTSD symptomatology and it emerged as the main significant predictor of PTSD. This is in line with previous research that highlights the strong association between emotion dysregulation and PTSD (Street et al., 2005; Tull et al., 2007). Our clinical sample showed an association between emotion dysregulation and CSA but not between DERS-SF and CEN or CPN. This finding might be explained by the large differences between self-reported emotional and physical neglect (52% and 28%) and emotional and physical neglect identified by the CTQ (83.5% and 67.5%).

No specific hypotheses were made in regards to the relationship between childhood maltreatment and social connectedness. With the exception of CSA, all forms of maltreatment negatively correlated with family identification. There were no associations between CTQ domains and community identification. With the exception of CEA, all other forms of maltreatment were negatively correlated with Other group identification. Whilst lower levels of Family and Other group identification were associated with PTSD, a surprising finding revealed that higher levels of community identification were significantly correlated with PTSD. This suggests that individuals in our current sample who identified less with and had less in common with their family and a chosen group, but those who identified more with their communities were more likely to experience greater PTSD symptoms. It is worth noting that the current sample was from a socioeconomically deprived community, with high levels of substance misuse and high risk of re-victimization, which have been shown to increase the risk of experiencing a mental health disorder (WHO, 2003). Furthermore, the Dundee Drugs Commission (2019) report initiated by the Dundee Partnership Forum highlighted some of the common factors identified in individuals directly affected by substance misuse in Dundee, such as poverty, trauma, violence and exclusion, with poverty being a feature in 85% of drug related deaths and 67% of cases were known to have mental health or psychiatric conditions (Dundee Drugs Commission, 2019). On the background of potentially disrupted attachment, exclusion from and lack of opportunity to belong to other groups of choice, identifying with their community might have

provided participants with the necessary sense of belonging. The multi-faceted risk factors for psychopathology in a socioeconomically deprived community may partly explain the positive associations between participants' identification with their community and PTSD symptoms in our sample.

The present study found support for the mediating role of identification with family and with a group of choice in the CEA model. Consistent with expectations and the stress buffering hypothesis (Cohen & Willis, 1985), social connectedness with family protected against PTSD in individuals reporting childhood emotional abuse. This finding extends previous work that highlights the positive impact of family identification on mental health (Alvarez et al., 2017) and the impact of emotional abuse on reduced emotional closeness with family (Savla et al., 2013). The ability to form relationships with a group of choice also protected against PTSD in adulthood. This is consistent with evidence that points to the role of friendships as buffering against trauma symptoms (Shevlin et al., 2015). It also underpins the importance of being able to choose and having control over the type of groups one wishes to identify with. These aspects are paramount in trauma-informed approaches endorsed by Scottish Government guidelines on psychological trauma (NHS Education Board for Scotland & Scottish Government, 2017). In contrast with previous studies (Burns et al., 2010), emotion dysregulation did not mediate the relationship between childhood emotional abuse and PTSD symptoms. However, Burns et al. used a different measure of trauma symptoms (Trauma Symptoms Inventory; TSI, Briere, 1995) and most notably, Burns et al.'s undergraduate sample had

significantly lower levels of reported CEA (24.6%) compared to the 89% in our clinical sample. Therefore, it is possible that these inconsistencies between findings are attributable to differences in measures and severity of childhood maltreatment in the current sample. A post-hoc CEA moderated mediation analysis was conducted to further explore the potential moderator role of emotion dysregulation as a possible explanation for the lack of mediation between CEA and PTSD. However, the interaction effect value included zero which suggested that emotion dysregulation did not moderate the mediation model. It is also possible that the mechanisms underlying CEA and emotion regulation skills in a clinical sample may be mediated by other factors not examined in this study, such as an ability to adapt to chronicity, in which suppressing negative experiences may be psychologically adaptive in order to cope with chronic and severe maltreatment (Anderson & Levy, 2009).

The final hypothesis was supported, showing that as CSA severity increased, lower identification with family was associated with greater PTSD symptoms. This finding highlights that the role of family within childhood abuse may not always be protective. This might occur when the abuse is perpetrated by a primary caregiver, or extended family member. With a reported 72% of CSA incidences perpetrated by family (WHO, 2014), detaching themselves from the family might be a form of survival and self-preservation. Within an attachment framework, when the caregiver is both a source of love, safety and threat, this may impact on the child's ability to form healthy and trusting relationships with others. This is in keeping with

evidence suggesting that insecure and particularly fearful attachment is central in understanding trauma symptoms in adults with childhood maltreatment histories (Woodhouse et al., 2015). As expected, emotion regulation was a significant mediator in the CSA model. This result supports findings that proposed the role of childhood sexual abuse in disrupting emotion regulation skills and contributing to the subsequent development of adult psychopathology, such as PTSD (Burns et al., 2010; Shipman et al., 2000).

4.2. Limitations

While this study contributed to the understanding of some of the mechanisms underlying the relationship between childhood maltreatment, emotion regulation, social connectedness and adult PTSD, there are some limitations to the current study. First, there are other potential mediating factors which were not measured in the current study but have been shown to contribute to increased PTSD symptomatology, such as attachment anxiety (Baer et al., 2006), re-victimization (Widom, 1999), depressive-specific cognitions such as rumination (Ehring & Ehlers, 2014), or parental trauma (Yehuda et al., 2001). As the data was routinely collected at service-level, it was not considered appropriate to add further measures so as not to increase patient burden. Future studies could expand on findings by including such variables in theoretical models. Second, the study employed self-report measures, which may be susceptible to retrospective bias and may result in underreporting of maltreatment histories (Tang et al., 2008). Self-report

measures of emotionality, such as the DERS-SF, may be prone to mood congruence bias (Hardt & Rutter, 2004), particularly for individuals with high levels of emotion regulation difficulties, such as in the current sample (Tull et al., 2007). Third, children exposed to chronic interpersonal trauma may present later with psychological difficulties, such as emotion dysregulation and interpersonal problems, which may not be captured by the PCL-5 measure or the PTSD diagnosis as set out in the DSM-5 (van der Kolk et al., 2005). In addition, the high percentage of participants who met PTSD criteria cut-off score (i.e. 95%) may indicate a ceiling effect in our current sample, which may have impacted on study results. Studies may need to replicate findings by including measures that better capture the complexities of severe and chronic interpersonal trauma, such as the International Trauma Questionnaire (ITQ; Cloitre et al., 2018). It might be noteworthy to highlight that emotion dysregulation and social connectedness might reflect transdiagnostic processes across different disorders, rather than being specific to PTSD. Finally, the generalizability of the findings may be limited by the sample size, specific demographic characteristics, and the cross-sectional design. Whilst there were high rates of childhood maltreatment in the sample, the analyses were based on a modest sample size, which precluded the possibility of including control variables in the theoretical models. Additionally, the cross-sectional design of the study does not allow for inference of causality to be drawn, while a longitudinal design would allow a thorough study of cumulative trauma and its effects on emotion dysregulation and social connectedness.

4.3. Research Implications

The study's findings revealed that all forms of childhood trauma were significantly associated with family and/or other group identification domains, but not with community identification. It might be worth for future studies to investigate longitudinal associations between specific group identification domains for each distinct type of childhood abuse and neglect. In addition, negative correlations between emotion dysregulation and all three domains of social connectedness warrants further research to better understand the relationship between these variables. It might also be worth for future studies to replicate findings in similar clinical samples of high socioeconomic deprivation and high childhood maltreatment rates to determine the specificity of the relationship between emotion dysregulation and childhood emotional abuse. Finally, it might be useful for future research to consider whether the experience of trauma was high in betrayal (Freyd, 1996), such that the interpersonal trauma was perpetrated by family members/guardians and to explore this by employing a betrayal trauma measure, such as the Brief Betrayal Trauma Survey (Goldberg & Freyd, 2006).

4.4. Clinical Implications

The sample consisted of adults with moderate to severe experiences of childhood interpersonal trauma. Whilst this limits the ability to generalize to the wider population, the data was gathered from a clinical sample accessing psychological treatment for trauma, and as such, it is representative of patients found within the mental health service in the UK. Separate domains

of social connectedness were explored, which allowed for a better understanding of the role of identification with each group. The study findings have clinical implications for prevention and early intervention work, particularly for interventions that target disruptions in the child-parent relationship, such as parent-child psychotherapy (Lieberman & Van Horn, 2011) or trauma-focused cognitive behavioural therapy (Cohen et al., 2016). Therefore, early interventions that address the developmental and emotional sequelae of childhood trauma may lessen the risk of adult PTSD. Clinically, the findings of the current study indicate that cumulative trauma and particularly emotional maltreatment is highly prevalent and that it relates to trauma symptomatology. These findings have wider clinical implications, specifically in relation to the way trauma-informed training is delivered, with a need for a greater focus on identifying and responding to emotional maltreatment. Additionally, employing trauma specific measures, such as the CTQ, might enhance trauma-informed practice and the way in which psychological services respond to emotional maltreatment. Finally, results of the study support trauma informed treatments, in particular those that employ a phased based approach, such as Survive & Thrive in the current study. The results indicate that treatments that promote the development of appropriate emotion regulation skills and that support skills to develop and maintain social relationships for individuals who have experienced childhood maltreatment may be beneficial in the treatment of adult PTSD symptomatology.

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Conflict of Interest

None.

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Appendices

Appendix A: Acta Psychiatrica Scandinavica Journal Author Guidelines

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Systematic Reviews / Meta-analyses

Acta Psychiatrica Scandinavica welcomes submission of systematic reviews and meta-analyses. Such submissions must follow both the general guidelines for manuscripts outlined above as well as the guidelines provided in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement

MANUSCRIPT REQUIREMENTS

The text should be in double-spacing with broad margins. Consult a current issue of the Journal for style and format. Main text files, including original articles, systematic reviews and from research to clinical practice articles must follow this format:

Title Page

A concise, informative title (max 15 words; without abbreviations and acronyms), the authors' names, the names in English of departments and institutions to be attributed, and their city and country of location. Please also include a running title with a maximum of 50 characters (letters and spaces). Name, email address, and affiliation, and full postal address of the corresponding author should be stated.

Abstract

The Abstract should be divided into the following sections: 'Objective', 'Methods', 'Results', and 'Conclusion' (the main part of the Abstract is devoted to Results). The abstract should not exceed 200 words.

Keywords

Please provide 3-5 keywords. Keywords should be taken from those recommended by the US National Library of Medicine's Medical Subject Headings (MeSH) browser list at **www.nlm.nih.gov/mesh**.

Special requirements for Systematic Reviews / Meta-analyses:

Summations:

Provide up to three significant Summations encapsulating the 'take-home messages' of the manuscript, The Summations should be presented succinctly (ideally only 1 sentence and max 2 sentences each), in tabulated form and should derive from the conclusions of the manuscript, without merely restating the conclusion, raising new issues, posing further questions or being dogmatic.

Limitations:

Provide up to three noteworthy Limitations. The Limitations must reflect any caveats or limitations related to the review process or the meta-analysis. The Limitations are to be presented succinctly (ideally only 1 sentence and max 2 sentences each) in tabulated form.

In the manuscript, the *Summations* and *Limitations* must be placed immediately below the Abstract/Keywords.

Main Text (Systematic Reviews)

Introduction

One to two pages concluded by the subtitle *Aims of the Study* (3 to 5 lines without literature references and abbreviations).

Material and Methods

The authors may refer to design and methods described in previously published articles, but must include a succinct yet comprehensive description of these aspects in the new submission as well.

Results

Clear and short avoiding double documentation to tables/figures.

Discussion

Acta Psychiatrica Scandinavica articles do not have a conclusion section. If the authors find it necessary, they may include a concluding remark of maximum 5 lines as the final part of the Discussion.

Acknowledgments

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section. Financial and material support should also be acknowledged.

Conflict of Interest Statement

Authors will be asked to provide a conflict of interest statement during the submission process. Submitting authors should ensure they liaise with all co-authors to confirm agreement with the final statement.

Tables and Figures

Tables should be self-contained and complement, not duplicate, information contained in the text. They should be supplied as editable files, not pasted as images. Legends should be concise but comprehensive – the table, legend, and footnotes must be understandable without reference to the text. All abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and *, **, *** should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.

Figure Legends

Legends should be concise but comprehensive – the figure and its legend must be understandable without reference to the text. Include definitions of any symbols used and define/explain all abbreviations and units of measurement.

Figures

The total number of figures/tables should not exceed 5. Figures are given priority over tables. Although authors are encouraged to send the highest-quality figures possible, for peer-review purposes, a wide variety of formats, sizes, and resolutions are accepted.

Figures submitted in color may be reproduced in colour online free of charge. Please note, however, that it is preferable that line figures (e.g. graphs and charts) are supplied in black and white.

References

All references should be numbered consecutively in order of appearance and should be as complete as possible. In text citations should cite references in consecutive order using Arabic superscript numerals. Should be kept to the pertinent minimum and numbered consecutively in the order in which they appear in the text in accordance with the *Vancouver System*. Identify references in text, tables, and legends by Arabic numerals (in parentheses). References cited only in tables or figure legends should be numbered in accordance with a sequence established by the first identification of that figure or table in the text. Use the style of the examples

below, which are based on Index Medicus. Abstracts cannot be used as references, unless published in an indexed scientific journal. Include manuscripts accepted, but not published; designate the abbreviated title of the journal followed by (in press). Papers published electronically, not yet hard copy publication should be identified by their DOI-number. Information from manuscripts not yet accepted should be cited in the text as personal communication. References must be verified by the authors against the original documents. Titles of journals should be abbreviated in accordance with Index Medicus.

Standard journal article: List all authors when 6 or fewer. When there are 7 or more, list only the first 3 authors and add "et al".
Examples:

MAZZONCINI R, DONOGHUE K, HART J et al. Illicit substance use and its correlates in first episode psychosis. Acta Psychiatr Scand 2010;**121**:351-358

Chapter in book:

ISMAIL K. Unraveling the pathogenesis of the depression-diabetes link. In KATON W, MAJ, M, SATORIUS N, eds. Depression and diabetes, Wiley-Blackwell, UK, 2010.

Additional Files

Appendices

Appendices will be published after the references. For submission they should be supplied as separate files but referred to in the text.

General Style Points

The following points provide general advice on formatting and style.

Abbreviations

In general, terms should not be abbreviated unless they are used repeatedly and the abbreviation is helpful to the reader. Initially, use the word in full, followed by the abbreviation in parentheses. Thereafter use the abbreviation only. For abbreviations

and symbols use Units, Symbols and Abbreviations for Authors and Editors in Medicine Related Sciences, Sixth Edition. Edited by D.N. Baron and M McKenzie Clarke. ISBN: 9781853156243, Paperback, April, 2008. Abbreviations are not allowed in titles, headings and “Aims of the Study”.

Conflict of Interest

The journal requires that all authors disclose any potential sources of conflict of interest. Any interest or relationship, financial or otherwise that might be perceived as influencing an author's objectivity is considered a potential source of conflict of interest. These must be disclosed when directly relevant or directly related to the work that the authors describe in their manuscript. Potential sources of conflict of interest include, but are not limited to: patent or stock ownership, membership of a company board of directors, membership of an advisory board or committee for a company, and consultancy for or receipt of speaker's fees from a company. The existence of a conflict of interest does not preclude publication. If the authors have no conflict of interest to declare, they must also state this at submission. It is the responsibility of the corresponding author to review this policy with all authors and collectively to disclose with the submission ALL pertinent commercial and other relationships.

Funding

Authors should list all funding sources in the Acknowledgments section. Authors are responsible for the accuracy of their funder designation. If in doubt, please check the Open Funder Registry for the correct nomenclature: **https://www.crossref.org/services/funder-registry/**

Authorship

The journal follows the **ICMJE definition of authorship**, which indicates that authorship be based on the following 4 criteria:

• Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work;

AND

• Drafting the work or revising it critically for important intellectual content;

AND

• Final approval of the version to be published;

AND

• Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work. In addition, authors should have confidence in the integrity of the contributions of their co-authors.

All those designated as authors should meet all four criteria for authorship, and all who meet the four criteria should be identified as authors. Those who do not meet all four criteria should be acknowledged. These authorship criteria are intended to reserve the status of authorship for those who deserve credit and can take responsibility for the work. The criteria are not intended for use as a means to disqualify colleagues from authorship who otherwise meet authorship criteria by denying them the opportunity to meet criterion #s 2 or 3. Therefore, all individuals who meet the first criterion should have the opportunity to participate in the review, drafting, and final approval of the manuscript.

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section (for example, to recognize contributions from people who provided technical help, collation of data, writing assistance, acquisition of funding, or a department chairperson who provided general support). Prior to submitting the article all authors should agree on the order in which their names will be listed in the manuscript.

Appendix B: Prisma Checklist

PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			

Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	

Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	

Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

Appendix C: Prospero Protocol, ID CRD42019147342

Correlates of treatment non-completion in borderline personality disorder: a systematic review

Adela Rodrigues, Kevin Power

Citation

Adela Rodrigues, Kevin Power. Correlates of treatment non-completion in borderline personality disorder: a systematic review. PROSPERO 2019 CRD42019147342 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42019147342

Review question

1. How is treatment non-completion defined in psychotherapeutic treatments for borderline personality disorder (BPD)?

2. What is the evidence for the association between service level variables and treatment non-completion in BPD?

3. What is the evidence for the association between psychological variables and treatment non-completion in BPD?

4. What are the methodological sources of bias in the literature?

Searches

A keyword, title and abstract search was conducted on the following electronic databases: MEDLINE, EMBASE, PsycINFO, Cochrane Library and CINAHL using search terms and Boolean operators relating to 'borderline personality disorder', 'non-completion' and 'interventions'.

The reference lists of relevant reviews and meta-analyses will be examined for additional studies.

A hand search of relevant journals from the past 10 years will be conducted, including Acta Psychiatrica Scandinavica, Journal of Personality Disorders, Behaviour Research and Therapy Journal, Borderline Personality Disorder and Emotion Dysregulation, British Journal of Clinical Psychology, Journal of Consulting and Clinical Psychology, and Journal of Behaviour Therapy and Experimental Psychiatry.

Key authors in the field will be contacted to identify potential missing relevant articles. Members of the British and Irish Group for the Study of Personality Disorder will be contacted for any other relevant missing or unidentified papers.

Types of study to be included

Observational: cross-sectional, case-controlled, prospective, retrospective, cohort studies

Experimental/treatment: between-group comparisons, and uncontrolled pre-post studies

Condition or domain being studied

Borderline personality disorder (BPD) is a psychiatric diagnosis characterised by impulsivity and an instability of self-image, affect and interpersonal relationships (American Psychiatric Association, 2013).

Participants/population

Participants aged 18 and over, diagnosed with borderline personality disorder or emotionally unstable personality disorder based on criteria of a recognised diagnostic system using a structured assessment procedure.

Appendix C: Prospero Protocol, ID CRD42019147342

Exclusion criteria:

1. Single case studies, qualitative studies, unpublished studies, conference abstracts, book chapters, reviews

2. Not written in English

3. Participants with a mixed personality disorder diagnosis

Intervention(s), exposure(s)

Empirical studies (observational or intervention studies) of evidence based psychotherapeutic interventions used in the treatment of BPD. These include, but are not limited to: cognitive behaviour therapy, dialectical behaviour therapy, transference focused therapy, schema therapy, mentalisation therapy and systems training for emotional predictability and problem solving.

Studies that report variables associated with treatment non-completion in BPD

Studies published in peer-reviewed journals

Comparator(s)/control

Usual care, active interventions, wait list control or no treatment group.

Context

Main outcome(s)

Strength of association between psychological variables and treatment non-completion in BPD

* Measures of effect

Not applicable.

Additional outcome(s)

Strength of association between service level variables and treatment non-completion in BPD

* Measures of effect

Not applicable.

Data extraction (selection and coding)

All articles found in the search process will be independently assessed in relation to the eligibility criteria by the primary author (Adela Rodrigues). The first stage of assessment will consist of a preliminary screening by examining abstracts and titles to determine relevancy. A comprehensive screening of the full text articles that are considered relevant will be carried out in relation to the inclusion criteria. At all stages a detailed log will be kept and the decisions made will be checked by the study supervisor (Prof. Kevin Power).

The extracted data will include:

1. Basic information: title, authors, year, country, study design, follow-up period (if applicable);

2. Participant information: sample size, mean age, percentage of females, diagnosis and screening method;

3. Psychotherapeutic intervention type, control (if applicable), setting, duration and intensity, therapist expertise;

4. Definition of dropout/non-completion, percentage of drop-out;

5. Quality criteria;

Appendix C: Prospero Protocol, ID CRD42019147342

6. Outcome data: correlates and predictors of drop-out;

7. Effect size of relationship if reported

Risk of bias (quality) assessment
Studies included in the review will be evaluated for methodological quality and potential for bias by using an adapted version of the ARHQ tool for quality of reporting criteria. Risk of bias assessment will be presented descriptively and implications will be discussed.

Strategy for data synthesis
A formal narrative synthesis will be applied to the included studies. Effect sizes of the relationship between treatment non-completion and key variables (e.g. psychological and service-related variables) will be extracted and calculated based on reported statistics, most likely Cohen's *d*. The strength of the effect size (small, medium, large) will then be discussed in the context of the key findings and the methodological quality assessment of each study.

Analysis of subgroups or subsets
None planned.

Contact details for further information
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Organisational affiliation of the review
University of Edinburgh, Department of Clinical and Health Psychology
www.ed.ac.uk/health/clinical-psychology

Review team members and their organisational affiliations
Mrs Adela Rodrigues. University of Edinburgh, Department of Clinical and Health Psychology
Professor Kevin Power. NHS Tayside

Type and method of review
Narrative synthesis, Systematic review

Anticipated or actual start date
02 July 2019

Anticipated completion date
19 December 2019

Funding sources/sponsors
University of Edinburgh

Conflicts of interest

Language
English

Country
Scotland

Stage of review
Review Ongoing

Subject index terms status
Subject indexing assigned by CRD

Subject index terms
Borderline Personality Disorder; Humans

Appendix C: Prospero Protocol, ID CRD42019147342

NIHR | National Institute for Health Research

PROSPERO
International prospective register of systematic reviews

Date of registration in PROSPERO
02 October 2019

Date of publication of this version
02 October 2019

Details of any existing review of the same topic by the same authors

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	Yes
Data extraction	Yes	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

Versions
02 October 2019

Appendix D: Effect Size Interpretation

For correlational designs, Pearson's correlation coefficient (*r*) and Spearman's Rank correlation coefficient (*rs*) statistics were both interpreted using the following Cohen's (1988) rule of thumb: Small (0.1-0.3); Medium (0.3-0.5); Large (>0.5).

The magnitude of effect of Standardized (β) and unstandardized (*B)* regression coefficients were interpreted using Acock et al.'s (2014) methodology, which follows the following conventions: Small (<0.2); Medium (0.2-0.5); Large (>0.5).

The magnitude of effect of Odds Ratio (OR) were interpreted using Chen et al.'s (2010) calculations that indicate that OR= 1.68, 3.47, and 6.71 are equivalent to Cohen's d =0.2 (small), 0.5 (medium), and 0.8 (large), respectively, when disease rate is 1% in the non-exposed group; Cohen's d<0.2 when OR < 1.5, and Cohen's d>0.8 when OR > 5.

The magnitude of effect of Hazard Ratios (HR) were interpreted using Azuero's (2016) methodology, which follows the following conventions: Small (1.3); Medium (1.9); Large (2.8) when comparing 2 groups and Small (1.14); Medium (1.47); Large (1.9) when the model involves a continuous predictor.

Appendix E: Quality Rating Guidelines and Example of Quality Rating Form

Adapted from Williams et al. (2010). Preventing Alzheimer's Disease and cognitive decline. Evidence report. Technology Assessment No 193 - Agency for Healthcare Research and Quality.

Quality Rating Guidelines and Example of Quality Rating Record Form

General Instructions:

- Grade each criterion as Well covered (++)/ adequately covered (+) or not adequately covered (-)
- Criteria below are written to characterize 'well covered'.
- Where an item is not applicable write: N/A.
- Factors to consider when making an assessment are listed under each criterion. Note that some criteria will only apply to specific types of study.
- Where a criterion only applies to a specific design, it is written in italics.

1. Unbiased selection of the sample?

- Inclusion/exclusion criteria is clearly defined and includes important exclusions relevant to the research question (i.e. excluding people with substance abuse or intellectual disability, due to this being a confounding factor)
- Sample assessed for diagnosis using a validated diagnostic measures (i.e. DSM-IV/ DSM-V/ DSM-III or ICD-10) (e.g. SCID)
- Sample is representative of the population of interest: people who have a diagnosis of Borderline Personality Disorder/ EUPD
- The recruitment strategy is clearly and fully described

2. Adequate description of sample

- Is the sample well characterized in terms of demographics?
- Consider key demographic information such as age, gender, and ethnicity. Including these factors would constitute 'adequate' for this area, depending on the research question at hand.
- Including information regarding education, employment, socio-economic factors as well as any other relevant clinical characteristics (i.e. medication use) would be considered "well covered".

3. Adequate method for measuring therapy non-completion?

- Was the method used to measure therapy non-completion and dropout clearly defined and described?

- Was the method adequate and justified for the research question?

4. Validated method for measuring psychological/clinical factor(s)?

- Was the method to measure factor(s) clearly defined and described?
- Was a valid and reliable method used to measure the factor(s)? The authors would have quoted psychometric information from validation papers from the current study however, the focus is on the measure itself rather than the reporting, so if the authors have not reported it, please refer to the original validation papers?

5. Validated method for ascertaining intervention?

- Evidence based intervention based on manual/ expertise (enough detail for replication)
- Training by developers of intervention
- Continued supervision
- Fidelity/ compliance checks

6. *Adequate follow-up period (longitudinal studies only)?*

- Is the follow-up period appropriate, is it too short/long? To answer this, consider the research question of the study – does this follow-up period adequately help to answer that question?
- A justification of the follow-up period length is preferable.

7. Missing data/ drop-out

- Did missing data from any group exceed 20%?
- In longitudinal studies, consider attrition over time as a form of missing data. Note that the criteria of <20% missing data may be unrealistic over longer follow-up periods.
- Are the reasons for missing data/drop-out clearly described/ recorded (e.g. attrition due to the nature, amount of handling of missing data)?
- If missing data is present and substantial, were steps taken to minimize bias (i.e appropriate statistical methods used to account for missing data)?
- Attempts made to follow-up as many of original sample as possible?

8. Sample size sufficient for analyses relating to correlates/ predictors of treatment non-completion?

- Was the sample size sufficient to power the study?
- For studies with smaller sample sizes, did the authors take any statistical measures to minimize risk?
- Did the authors report conducting a power analysis or describe some other basis for determining the sample size for the primary outcomes of interest (i.e. drop-out and psychological variables)?

- Did the eventual sample size deviate by <10% of the sample size suggested by the power calculation?

9. Analytic methods adequate?

- Were the methods of analysis conducted appropriate for the type of outcome data (categorical, continuous, etc.)?
- Was the number of variables used in the analysis appropriate for the sample size? (The statistical techniques used must be appropriate to the data and take into account issues such as controlling for small sample size, clustering, rare outcomes, multiple comparison, and number of covariates for a given sample size)
- Are key variables all included in the analysis? Is there anything missing?
- If t-tests/correlations have been significant, are they then included in the analysis (e.g. regression)?
- If appropriate, have key demographic data or other important variables been included in the regression analysis as covariates or potential moderators?

10. Adequate description of blinding procedure(s) (RCTs only)

- Were subjects and therapists blind to intervention status of participants, preferably at screening procedure and first assessment?
- Were outcome assessors blind to intervention status?

11. Extraneous variables (RCTs only)

- Groups in equivalent environments
- Groups similar regarding baseline characteristics and at pre-test (or adjustments made e.g. ANCOVA)
- Groups similar on other key variables
- Adequate control groups
- Attempts to control for other extraneous variables

Quality Rating for BPD Systematic Review

To be used in conjunction with the adapted ARHQ checklist notes

Reviewer: Adela Rodrigues

Date: 07/09/2019

Article (1st author & date): Barnicot, 2016, UK

Research Design: Longitudinal study

Tool item	Descriptor	Decision/ Rating (Well/ adequately/ not adequately covered/ not reported/ N/A)	Notes
1	**Unbiased selection of the sample?**	Well covered ++	Clearly described inclusion and exclusion criteria, other co-morbidities such as substance abuse or active psychosis was not an exclusion criteria, validated screening diagnosis measure SCI-DSM-IV, recruitment strategy clear (community personality disorder service in the UK)
2	**Adequate description of the sample?**	Well covered ++	Information on age, gender, ethnicity, employment, medication use at baseline and common co-morbidities was reported
3	**Adequate method for measuring/defining therapy non-completion/ dropout**	Well covered ++	Non-completion if participant misses more than 3 consecutive individual or group sessions according to DBT founder Linehan & dropout assessed if participant in treatment at each 2 month time point over the 12 month study period-clear description and definition-adequate & justified
4	**Validated method for measuring psychological/clinical factor(s)**	Well covered ++	Self-efficacy scale, skill use, therapeutic alliance, treatment credibility and outcome measure of self-harm (Linehan Suicide Attempt Self-Injury Interview), clear description and good psychometric properties reported
5	**Validated method for ascertaining intervention**	Well covered ++	All therapists received training by developer's official training provider (Behavior Tech), supervision from DBT experts, trained adherence raters assessed both group and individual sessions adherent to the DBT model, used Linehan's

			protocol for DBT
6	***Adequate follow-up period (longitudinal studies only)?***	Well covered ++	Adequate, with assessments every 2 months for one year post treatment
7	**Missing data/ drop-out**	Well covered ++	Attrition rate=17% (acceptable)
8	**Sample size sufficient for analyses relating to correlates/ predictors of service disengagement?**	Adequately covered +	n=70, sufficiently powered for multivariate analysis but not for structural equation modeling, which could have been used to identify strength of association between treatment process variables and self-harm, power calculations not reported
9	**Analytic methods adequate?**	Well covered ++	Multivariate analyses, justification provided
10	***Adequate description of blinding procedure(s) (RCTs only)***	N/A	
11	***Extraneous variables (RCTs only)***	N/A	

Appendix F: Table Outlining Reasons for Exclusion of Each Full-Text Article

Study Title (Year; First Author)	**Reason for Exclusion**
A comparison of treatment completers and non-completers of an in-patient treatment programme for male personality-disordered offenders. (McMurran, 2008).	Mixed personality disorders diagnoses
Psychological treatment for borderline personality disorders (BPD). (2007, Bernardo)	Did not investigate correlates or predictors
Dialectical behaviour therapy for borderline personality disorder (2002, Robins)	Did not investigate correlates or predictors
Systems Training for Emotional Predictability and Problem Solving (STEPPS): Program efficacy and personality features as predictors of drop-out (2014, Alesiani)	In Spanish, mixed PD diagnoses
Coping and regulating emotions: A pilot study of modified dialectical behaviour therapy group delivered in a college counselling service (2013, Meany-Tavares)	Did not investigate correlates or predictors
Systems Training for Emotional Predictability and Problem Solving (STEPPS): Theoretical model, clinical application, and preliminary efficacy data in a sample of inpatients with personality disorders in comorbidity with mood disorders (2012, Boccalon)	Did not investigate correlates or predictors
Integrating empirically supported therapies for treating personality disorders: A synthesis of psychodynamic and cognitive-behavioral group treatments (2012, Rivera)	Paper focused on two case studies, rather than investigating correlates or predictors related to dropout/ non-completion
Transference-focused psychotherapy reduces treatment drop-out and suicide attempters compared with community psychotherapist treatment in Borderline Personality Disorder (2010, Levy)	Investigated efficacy of TFP vs TAU, rather than correlates or predictors associated with dropout/ non-completion
Systems Training for Emotional Predictability and Problem Solving (STEPPS) for outpatients with borderline personality disorder: A randomized controlled trial and 1-year follow-up (2008, Blum)	Did not investigate correlates or predictors
STEPPS: Systems training for emotional predictability and problem solving in women offenders with borderline personality disorder in prison – A pilot study (2008, Black)	Efficacy study rather than investigation of correlates or predictors
Outpatient psychotherapy for borderline personality disorder randomized trial of	Investigated effectiveness of therapies rather than investigation

schema-focused therapy vs transference-focused psychotherapy (2006, Geisen-Bloo)	of correlates/ predictors
Transference-focused psychotherapy for borderline personality disorder. A study with female patients (2004, Lopez)	In Spanish, did not investigate correlates/ predictors
The development of a psychodynamic treatment for patients with borderline personality disorder: A preliminary study of behavioural change (2001, Clarkin)	Did not investigate correlates or predictors
Outcome of mentalization-based and supportive psychotherapy in patients with borderline personality disorder: a randomized trial (2013, Jorgensen)	Did not investigate correlates or predictors
A schema-focused approach to group psychotherapy for outpatients with borderline personality disorder: a randomized controlled trial (2009, Farrell)	Did not investigate correlates or predictors
Preliminary data on an acceptance-based emotion regulation group intervention for deliberate self-harm among women with borderline personality disorder (2006, Gratz)	Did not investigate correlates or predictors
How does dialectical behavior therapy facilitate treatment retention among individuals with comorbid borderline personality disorder and substance use disorders? (2007, Bornovalova)	Review of potential treatment retention strategies for BPD and co-morbid substance disorder
Time-limited group psychotherapy for patients with personality disorders: Outcomes and dropouts. (1996, Budman)	Mixed personality disorder diagnoses in different group settings
Evaluating three treatments for borderline personality disorder: A multiwave study. (2007, Clarkin)	Did not investigate correlates or predictors
Early termination of treatment in personality disorder treated in a psychotherapy hospital: Quantitative and qualitative study. (2000, Chiesa)	Mixed PD
Social problem-solving plus psychoeducation for adults with personality disorder: pragmatic randomised controlled trial.(2007, Huband)	Mixed PD
Patient factors predicting dropout from supportive-expressive psychotherapy for patients with personality disorders. (2003, Thormahlen)	Mixed PD
Object relations development and psychotherapy dropout in borderline outpatients. (1996, Horner)	Did not investigate correlates of predictors
Early discontinuance of borderline patients from psychotherapy (1989, Gunderson)	Unclear which evidence based psychotherapeutic intervention used
Can we study (treat) borderline patients? Attrition from research and open treatment	Not diagnosed under the DSM or ICD criteria & not use of evidence

(1992, Kelly)	based psychotherapy
Group psychotherapy with borderline patients: Contrasting remainers and dropouts. (1994, Stiwne)	Unclear which evidence base group intervention
Effectiveness of partial hospitalization in the treatment of borderline personality disorder: a randomized controlled trial.(1999, Bateman)	Did not investigate correlates or predictors
Randomized controlled trial of outpatient mentalization-based treatment versus structured clinical management for borderline personality disorder (2009, Bateman)	Did not investigate correlates or predictors
A randomized controlled trial of a Dutch version of systems training for emotional predictability and problem solving for borderline personality disorder. (2010, Bos)	Did not investigate correlates or predictors
The effectiveness of cognitive behavior therapy for borderline personality disorder: results from the borderline personality disorder study of cognitive therapy (BOSCOT) trial. (2006, Davidson)	Did not investigate correlates or predictors
A controlled trial of psychodynamic psychotherapy for co-occurring borderline personality disorder and alcohol use disorder. (2008, Gregory)	Mixed PD, did not investigate correlates or predictors
Cognitive-behavioral treatment of chronically parasuicidal borderline patients. (1991, Linehan)	Did not investigate correlates or predictors
A randomized trial of dialectical behavior therapy versus general psychiatric management for borderline personality disorder (2009, McMain)	Did not investigate correlates or predictors
Dialectical behaviour therapy for women with borderline personality disorder: 12-month, randomised clinical trial in The Netherlands. (2003, Verheul)	Did not investigate correlates or predictors
Two-year randomized controlled trial and follow-up of dialectical behaviour therapy vs Therapy by Experts for Suicidal Behaviours and Borderline Personality Disorder (2006, Linehan)	Did not investigate correlates or predictors

Appendix G: Child Abuse and Neglect Journal Author Guidelines

Retrieved from https://www.elsevier.com/journals/child-abuse-and-neglect/0145-2134?generatepdf=true (Accessed on 31st January 2020).

PREPARATION

Peer review: this journal operates a double blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. More information on types of peer review.

Double-blind review: this journal uses double-blind review, which means the identities of the authors are concealed from the reviewers, and vice versa. More information is available on our website. To facilitate this, please include the following separately:

Title page (with author details): This should include the title, authors' names, affiliations, acknowledgements and any Declaration of Interest statement, and a complete address for the corresponding author including an e-mail address.

Blinded manuscript (no author details): The main body of the paper (including the references, figures, tables and any acknowledgements) should not include any identifying information, such as the authors' names or affiliations. Use of word processing software It is important that the file be saved in the native format of the word processor used. The text should be in single-column format.

Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the word processor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc.

When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork. To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

Length and Style of Manuscripts: full-length manuscripts should not exceed 35 pages total (including abstract, text, references, tables, and figures), double spaced with margins of at least 1 inch on all sides and a standard font (e.g., Times New Roman) of 12 points (no smaller). Instructions on preparing tables, figures, references, metrics, and abstracts appear in the Publication Manual of the American Psychological Association (6th edition).

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Introduction State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Title. Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.

Author names and affiliations. Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lowercase superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

Corresponding author: Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. This responsibility includes answering any future queries about Methodology and Materials. Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author. Present/permanent address. If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Highlights: Highlights are optional yet highly encouraged for this journal, as they increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Highlights should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point).

Abstract: abstracts should follow a structured format of no more than 250 words including the following sections: Background, Objective, Participants and Setting, Methods, Results (giving specific effect sizes and their statistical significance), and Conclusions. Keywords Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes. Formatting of funding sources List funding sources in this standard way to facilitate compliance to funder's requirements:

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References

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List: references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication. [dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T. (2015). Mortality data for Japanese oak wilt disease and surrounding forest compositions. Mendeley Data, v1. http://dx.doi.org/10.17632/ xwj98nb39r.1.

Examples: Reference to a journal publication: Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2010). The art of writing a scientific article. Journal of Scientific Communications, 163, 51–59. Reference to a book: Strunk, W., Jr., & White, E. B. (2000). The elements of style. (4th ed.). New York, NY: Longman.

Reference to a chapter in an edited book: Mettam, G. R., & Adams, L. B. (2009). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), Introduction to the electronic age (pp. 281–304). New York, NY: EPublishing. Video Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content. Data visualization Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

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Appendix H: University of Edinburgh Ethical Approval

School of Health in Social Science
Clinical and Health Psychology

The University of Edinburgh
Medical School
Doorway 6, Teviot Place
Edinburgh EH8 9AG

Telephone 0131 651 3969
Fax 0131 650 3891
Email submitting.ethics@ed.ac.uk

Adela Rodrigues
Trainee Clinical Psychologist
Department of Clinical and Health Psychology
School of Health in Social Science
University of Edinburgh

28 February 2020

Dear Adela,

Application for Ethical Approval

Reference: CLIN691
Project Title: Childhood trauma and Post-Traumatic Stress Disorder: The role of Emotion Regulation and Social Connectedness

Thank you for submitting the above research project for review by the School of Health in Social Science Research Ethics Committee (REC) / Clinical Psychology Panel. I can confirm that the submission has been independently reviewed and was approved on 27th January 2020.

The standard conditions of this approval are:

I. Conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the REC.
II. Advise the REC (by email to ethics.hiss@ed.ac.uk) of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project.
III. Make submission for approval of amendments to the approved project before implementing such changes.
IV. Advise in writing if the project has been discontinued.

The School's Research Ethics Policy and further information and resources are available on the School's website.

You may now commence your project, we wish you the best of luck.

Yours sincerely,

Administrative Secretary
Clinical Psychology

Appendix I: NHS Tayside Caldicott Approval

Information Governance
Maryfield House South
Mains Loan
Dundee
DD4 7BT
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Ext. 70249
www.nhstayside.scot.nhs.uk

Adela Rodrigues
Chief Investigator/Trainee Clinical Psychologist
Dundee Adult Psychological Therapies Service
15 Dudhope Terrace
Dundee
DD3 6HH

Date	13 January 2020
Your Ref	
Our Ref	IGTCAL7123
Enquiries to	Mr J. Donnelly
Extension	70249
Direct Line	N/A
Email	joseph.donnelly@nhs.net

Dear Adela

CALDICOTT APPROVAL – Childhood trauma and Post-Traumatic Stress Disorder: A mediated analysis of the role of Emotion Regulation and Social Connectedness

Proposal Sponsor: Professor Kevin Power, Consultant Clinical Psychologist/Director of Psychology, NHS Tayside

Data User(s): Adela Rodrigues, Chief Investigator/Trainee Clinical Psychologist, NHS Tayside/University of Edinburgh

Caldicott approval is given for you to access relevant and proportionate personal data, as described in your application and supporting information.

Thank you for your co-operation in providing us with the information requested by us in this process.

Please contact me should any queries arise from the application of this approval, or if you wish to make any amendments to the scope of the data being accessed or the named data users.

Yours sincerely

Joseph Donnelly

Joseph Donnelly

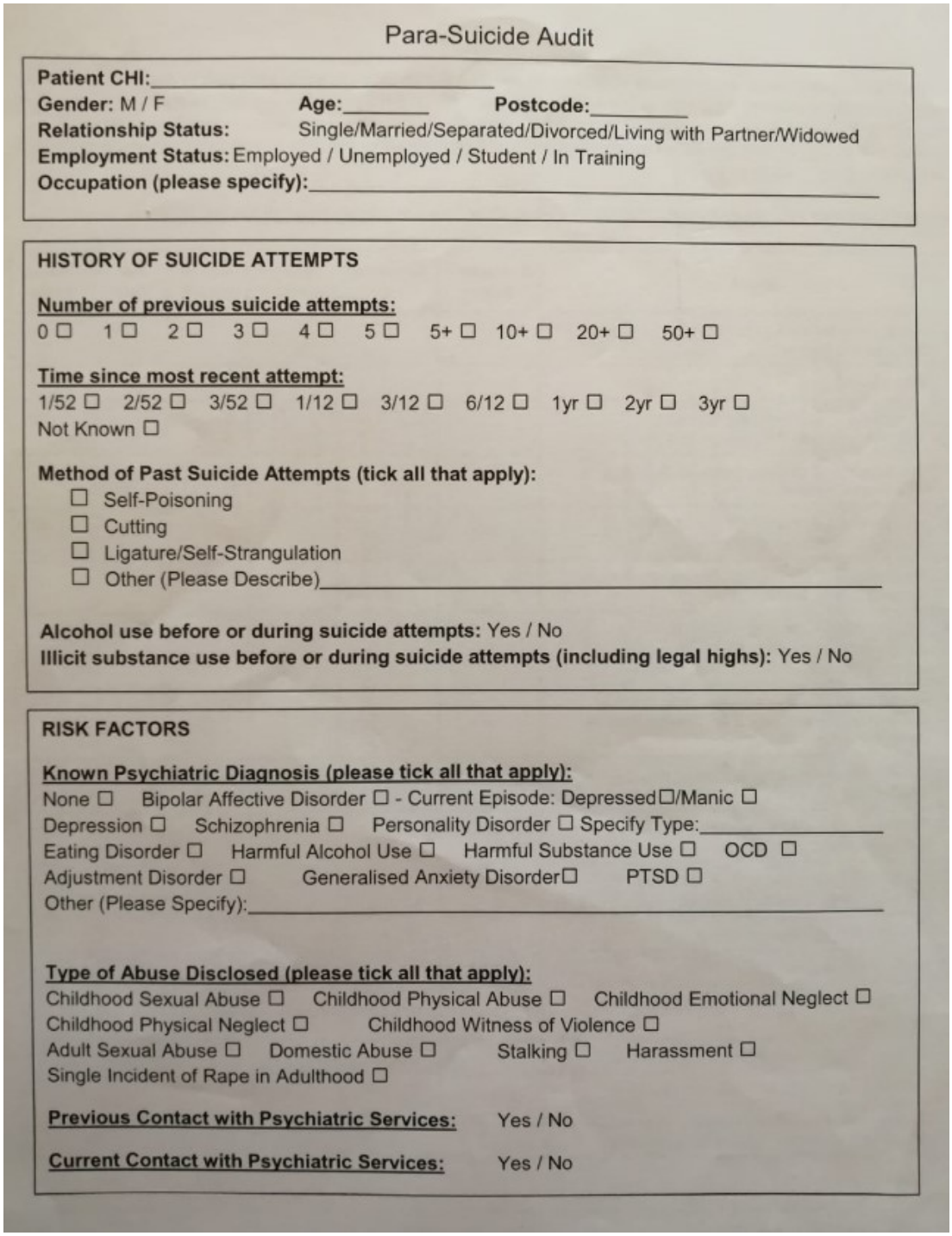
disability confident EMPLOYER

Information Governance Officer
(Caldicott & Data Protection)

Copy to: Professor Kevin Power, Consultant Clinical Psychologist/Director of Psychology, NHS Tayside

Appendix J: Study Measures

Para-Suicide Audit



Para-Suicide Audit

Patient CHI:_____
Gender: M / F **Age:**_____ **Postcode:**_____
Relationship Status: Single/Married/Separated/Divorced/Living with Partner/Widowed
Employment Status: Employed / Unemployed / Student / In Training
Occupation (please specify):_____

HISTORY OF SUICIDE ATTEMPTS

Number of previous suicide attempts:
0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 5+ ☐ 10+ ☐ 20+ ☐ 50+ ☐

Time since most recent attempt:
1/52 ☐ 2/52 ☐ 3/52 ☐ 1/12 ☐ 3/12 ☐ 6/12 ☐ 1yr ☐ 2yr ☐ 3yr ☐
Not Known ☐

Method of Past Suicide Attempts (tick all that apply):
- ☐ Self-Poisoning
- ☐ Cutting
- ☐ Ligature/Self-Strangulation
- ☐ Other (Please Describe)_____

Alcohol use before or during suicide attempts: Yes / No
Illicit substance use before or during suicide attempts (including legal highs): Yes / No

RISK FACTORS

Known Psychiatric Diagnosis (please tick all that apply):
None ☐ Bipolar Affective Disorder ☐ - Current Episode: Depressed ☐/Manic ☐
Depression ☐ Schizophrenia ☐ Personality Disorder ☐ Specify Type:_____
Eating Disorder ☐ Harmful Alcohol Use ☐ Harmful Substance Use ☐ OCD ☐
Adjustment Disorder ☐ Generalised Anxiety Disorder ☐ PTSD ☐
Other (Please Specify):_____

Type of Abuse Disclosed (please tick all that apply):
Childhood Sexual Abuse ☐ Childhood Physical Abuse ☐ Childhood Emotional Neglect ☐
Childhood Physical Neglect ☐ Childhood Witness of Violence ☐
Adult Sexual Abuse ☐ Domestic Abuse ☐ Stalking ☐ Harassment ☐
Single Incident of Rape in Adulthood ☐

Previous Contact with Psychiatric Services: Yes / No

Current Contact with Psychiatric Services: Yes / No

Appendix J: Study Measures cont'd

The Childhood Trauma Questionnaire (CTQ)

CTQ

Name: _____ _____

Age: _____ Sex: _____

Ready Score® Answer Document

When I was growing up ...	Never True	Rarely True	Sometimes True	Often True	Very Often True
1. I didn't have enough to eat.	●	○	●	○	●
2. I knew that there was someone to take care of me and protect me.	●	○	●	○	●
3. People in my family called me things like "stupid," "lazy," or "ugly."	●	○	●	○	●
4. My parents were too drunk or high to take care of the family.	●	○	●	○	●
5. There was someone in my family who helped me feel that I was important or special.	●	○	●	○	●
6. I had to wear dirty clothes.	●	○	●	○	●
7. I felt loved.	●	○	●	○	●
8. I thought that my parents wished I had never been born.	●	○	●	○	●
9. I got hit so hard by someone in my family that I had to see a doctor or go to the hospital.	●	○	●	○	●
10. There was nothing I wanted to change about my family.	●	○	●	○	●
11. People in my family hit me so hard that it left me with bruises or marks.	●	○	●	○	●
12. I was punished with a belt, a board, a cord, or some other hard object.	●	○	●	○	●
13. People in my family looked out for each other.	●	○	●	○	●
14. People in my family said hurtful or insulting things to me.	●	○	●	○	●
15. I believe that I was physically abused.	●	○	●	○	●
16. I had the perfect childhood.	●	○	●	○	●
17. I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor.	●	○	●	○	●
18. I felt that someone in my family hated me.	●	○	●	○	●
19. People in my family felt close to each other.	●	○	●	○	●
20. Someone tried to touch me in a sexual way, or tried to make me touch them.	●	○	●	○	●
21. Someone threatened to hurt me or tell lies about me unless I did something sexual with them.	●	○	●	○	●
22. I had the best family in the world.	●	○	●	○	●
23. Someone tried to make me do sexual things or watch sexual things.	●	○	●	○	●
24. Someone molested me.	●	○	●	○	●
25. I believe that I was emotionally abused.	●	○	●	○	●
26. There was someone to take me to the doctor if I needed it.	●	○	●	○	●
27. I believe that I was sexually abused.	●	○	●	○	●
28. My family was a source of strength and support.	●	○	●	○	●

Appendix J: Study Measures cont'd

Post-Traumatic Stress Disorder Checklist for DSM-5 (PCL-5)

PCL-5

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "superalert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

Appendix J: Study Measures cont'd

Difficulties in Emotion Regulation Scale - Short Form (DERS-SF)

Difficulties in Emotion Regulation Scale – Short Form (DERS-SF)

Kaufman, Xia, Fosco, Yaptangco, Skidmore, & Crowell (2015)

Please indicate how often the following apply to you.

	Almost Never (0–10%)	Some-times (11–35%)	About Half Of the Time (36–65%)	Most of the Time (66–90%)	Almost Always (91–100%)
1. I pay attention to how I feel	1	2	3	4	5
2. I have no idea how I am feeling	1	2	3	4	5
3. I have difficulty making sense out of my feelings	1	2	3	4	5
4. I care about what I am feeling	1	2	3	4	5
5. I am confused about how I feel	1	2	3	4	5
6. When I'm upset, I acknowledge my emotions	1	2	3	4	5
7. When I'm upset, I become embarrassed for feeling that way	1	2	3	4	5
8. When I'm upset, I have difficulty getting work done	1	2	3	4	5
9. When I'm upset, I become out of control	1	2	3	4	5
10. When I'm upset, I believe that I will end up feeling very depressed	1	2	3	4	5
11. When I'm upset, I have difficulty focusing on other things	1	2	3	4	5
12. When I'm upset, I feel guilty for feeling that way	1	2	3	4	5
13. When I'm upset, I have difficulty concentrating	1	2	3	4	5
14. When I'm upset, I have difficulty controlling my behaviors	1	2	3	4	5
15. When I'm upset, I believe there is nothing I can do to make myself feel better	1	2	3	4	5
16. When I'm upset, I become irritated with myself for feeling that way	1	2	3	4	5
17. When I'm upset, I lose control over my behavior	1	2	3	4	5
18. When I'm upset, it takes me a long time to feel better	1	2	3	4	5

Appendix J: Study Measures cont'd

Group Identification Scale (GIS)

Group Identifications Scale (GIS)

The Group Identification Scale (GIS) taps *one's sense of belonging to an in-group, coupled with one's sense of commonality with other in-group members*. As such, group identification concerns the *subjective* dimension of being part of a group, rather than a more behavioral dimension such as frequency of contact with in-group members, or intensity of participation in group-related activities.

GIS is a global scale including four items, each one rated on a 1 to 7-point Lickert-type scale. Therefore, ones' total score on the scale may range from 4 to 28. Although it is normally used as a continuous scale, GIS can also be used as a binary scale distinguishing between those who are and those who are not identified with a group. The cut-off score for group identification (vs. lack of group identification) is 20, or 5 if the average score of the four items forming the scale is used.

A number of studies, reported in Sani, Madhok, Norbury, Dugard, & Wakefield (2014), have confirmed that GIS has a good internal reliability (α normally ranges from .85 to .92). These studies have also confirmed that GIS has convergent validity (i.e., it correlates strongly with other group identification scales), divergent validity (i.e., it correlates only moderately with scales measuring other perceptual/evaluative aspects of an in-group, such as its distinctiveness from other groups), and temporal stability (e.g., in a test-retest study with a three-week lag between test 1 and test 2, the Pearson's correlation coefficient for the GIS scale adapted for the family group was .91).

The typical format of GIS can be found below.

Please specify how much you disagree or agree with each statement concerning YOU AND YOUR GROUP.
Please tick ✓ ONE box on each line below.

	I strongly disagree	I disagree	I slightly disagree	I neither agree nor disagree	I slightly agree	I agree	I strongly agree
I feel a bond with my [group].	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I feel similar to the other members of my [group].	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I have a sense of belonging to my [group].	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I have a lot in common with the members of my [group].	☐1	☐2	☐3	☐4	☐5	☐6	☐7

Appendix J: Study Measures cont'd

Group Identification Scale (GIS)

GIS can be easily adapted to virtually any type of group. Below we report two examples, concerning the family group and the local community respectively.

Please specify how much you disagree or agree with each statement concerning YOU AND YOUR FAMILY. You may define *family* in any way you wish (e.g., immediate family or extended family, etc.). Please tick ✓ ONE box on each line below.

	I strongly disagree	I disagree	I slightly disagree	I neither agree nor disagree	I slightly agree	I agree	I strongly agree
I feel a bond with my family.	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I feel similar to the other members of my family.	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I have a sense of belonging to my family.	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I have a lot in common with the members of my family.	☐1	☐2	☐3	☐4	☐5	☐6	☐7

Please specify how much you disagree or agree with each statement concerning YOU AND YOUR LOCAL COMMUNITY. *Local community means your neighbourhood, village, city area, or any other way you may define it.* Please tick ✓ ONE box on each line below.

	I strongly disagree	I disagree	I slightly disagree	I neither agree nor disagree	I slightly agree	I agree	I strongly agree
I feel a bond with my local community.	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I feel similar to the other members of my local community.	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I have a sense of belonging to my local community.	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I have a lot in common with the members of my local community.	☐1	☐2	☐3	☐4	☐5	☐6	☐7

Appendix J: Study Measures cont'd

Group Identification Scale (GIS)

GIS can also be used in studies assessing identification with a group selected by the participant him/herself. In this case, we suggest the following format.

Please choose a SOCIAL GROUP to which you belong, using the list of groups below. Please place a tick ✓ in the box beside your chosen group. Please only select ONE group. If none of the listed groups correspond to the group you want to choose, please select *Other* and specify what type of group that is.

Sport team/class/club ☐	Hobby/interest group ☐	Support group ☐
Voluntary/charity group ☐	Workplace group ☐	Reading/study group ☐
Group of friends ☐	Religious group/institution ☐	Other ☐ *Please specify:* .....

Please specify how much you disagree or agree with each statement concerning YOU AND YOUR CHOSEN GROUP. Please tick ✓ ONE box on each line below.

	I strongly disagree	I disagree	I slightly disagree	I neither agree nor disagree	I slightly agree	I agree	I strongly agree
I feel a bond with my chosen group.	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I feel similar to the other members of my chosen group.	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I have a sense of belonging to my chosen group.	☐1	☐2	☐3	☐4	☐5	☐6	☐7
I have a lot in common with the members of my chosen group.	☐1	☐2	☐3	☐4	☐5	☐6	☐7

If you wish to use the scale, you do not need to ask for permission. In any publication or public talk where the scale is used, please refer to the following paper:

Sani, F., Madhok, V., Norbury, M., Dugard, P., & Wakefield, J. R. H. (2014). Greater number of group identifications is associated with healthier behaviour: Evidence from a Scottish community sample. *British Journal of Health Psychology*, DOI: 10.1111/bjhp.12119.

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Appendix K: Linear Regression Model

Table 2.
Linear Regression Model summary across three blocked-entry models

	R	R^2	Adj. R^2	F	*p*
Model 1	.264	.069	.050	3.621	.007
Model 2	.606	.367	.351	91.282	.000
Model 3	.624	.389	.363	2.294	.079

Note. Model 1 = Childhood Trauma Questionnaire (CTQ) scores for Emotional, Physical and Sexual Abuse, and Emotional Neglect
Model 2 = CTQ scores for Emotional, Physical and Sexual Abuse and Emotional Neglect, total mean score on Difficulties in Emotion Regulation Scale
Model 3 = CTQ scores for Emotional, Physical and Sexual Abuse and Emotional Neglect, total mean score on Difficulties in Emotion Regulation Scale, Group Identification Scale Family, Community and Other group domain mean scores

Appendix K. Linear Regression Models (cont'd)

Table 3.
Unstandardised coefficients beta, standard errors, standardised coefficients beta, and t-values in the linear regression models predicting PTSD

Variable	Model 1				Model 2				Model 3			
	B	SE_B	*β*	*t*	*B*	SE_B	*β*	*t*	*B*	SE_B	*β*	*t*
CEA	.014	.012	.124	1.13	.012	.010	.111	1.22	.011	.010	.098	1.066
CPA	.001	.010	.012	.128	-.002	.009	-.020	-.268	-.003	.009	-.026	-.340
CSA	.011	.006	.138	1.87	.005	.005	.061	.992	.005	.005	.062	1.008
CEN	.008	.011	.072	.762	.014	.009	.123	1.58	.011	.009	.095	1.174
DERS-SF					.552	.058	.554	9.554*	.512	.061	.514	8.379*
GIS-F									-.024	.024	-.063	-.998
GIS-C									-.020	.028	-.046	-.693
GIS-O									-.037	.020	-.115	-1.83

Note. B = Unstandardised regression coefficient; SE_B = Standard error of the coefficient; *β* = standardised regression coefficient; t = t-test; CEA = Childhood Emotional Abuse; CPA = Childhood Physical Abuse; CSA = Childhood Sexual Abuse; CEN = Childhood Emotional Neglect; DERS-SF = Dysfunctional Emotion Regulation Scale-Short-Form; GIS-F = Group Identification Scale - Family Domain; GIS-C = Group Identification Scale - Community domain; GIS-O = Group Identification Scale - Other chosen domain.

*$p < .01$